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New Interstate Mill Has Pack Cooling Bed

Runout Table Also a Prominent Feature, All Rollers Having Individual Motor Drive and Those Next to Bed Are of Swiveled Cone Type

BY GILBERT L. LACHER

TO the Interstate Iron & Steel Co., Chicago, goes the credit of having placed in operation a pack cooling bed which is the first installation of its kind in the industry. This innovation is a salient feature, at the company's South Chicago works, in a new merchant rolling mill designed and built by the Morgan Construction Co., Worcester, Mass. In general, the mill is similar in arrangement and mechanical details to the construction used in other Morgan mills, but the pack cooling bed and a number of other important deviations from previous design mark another forward step in the interests of maximum economy and quality in the rolling of both plain carbon and alloy steels.

Together with the hot runout table serving it, the bed was provided for handling products, such as alloy steel, requiring special treatment during the cooling

process from mill to shear. It is so designed that when cooling such material as spring flats, there is absolute control of the time from the finishing rolls to the pack, of the size of the pack, the time in the pack, and of the time from the pack to the shear. Operation of the bed thus far indicates that it can handle alloy steels of any commercial degree of hardness desired, and that it will deliver stock to the shear straight and at a temperature suitable for shearing. This is being done without sacrifice of output and without incurring unusual expense.

About 300 ft. long, the bed is a combination of an Edwards inclined gravity escapement bed and a horizontal notched bed, and was designed especially for the slow cooling of alloy spring steels. The inclined portion of the bed is narrower than usual, as the horizon-



Specially Designed for the Slow Cooling of Alloy Spring Steel Rods, the Hot Bed Is a Combination of a Narrow Inclined Gravity Escapement Section and a Horizontal Notched Section. Between the two sections are jointed packing bars. Finished material is accumulated in bundles on the packing bars and by them transferred to the horizontal section, across which it moved pack by pack. This permits the annealing of material of small cross section, which would otherwise cool too rapidly

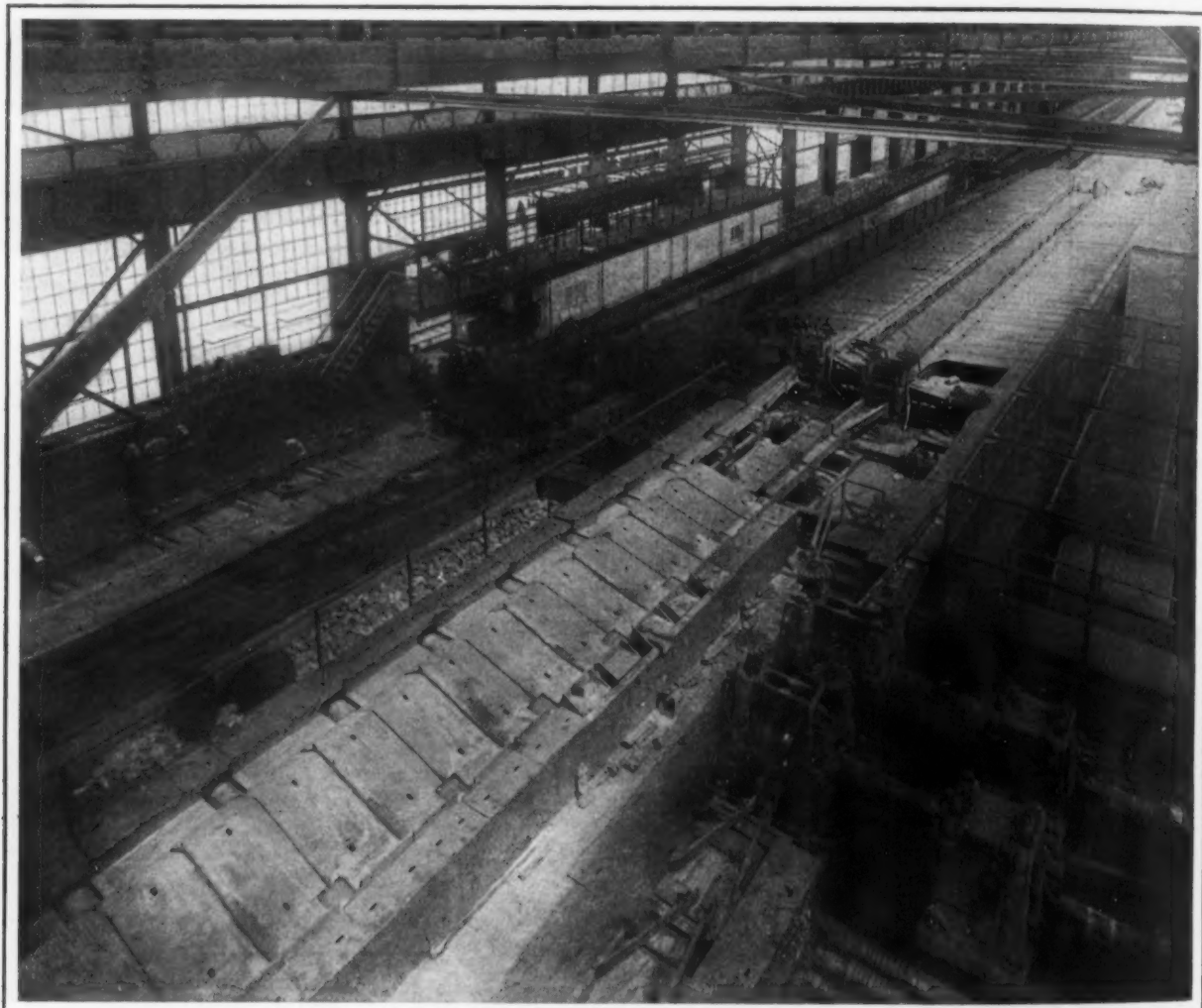
tal portion provides the necessary space in which the cooling is completed. The principal innovation in design is to be found in a packing device introduced between the inclined and horizontal portions of the bed. This apparatus consists of a series of jointed bars actuated by two shafts. The packing arrangement permits the annealing of material of small cross-section, such as spring steel, which would otherwise cool too fast. Some spring alloy steel, in fact, is of such analysis that it would not pass the required specifications for softness if cooled on an ordinary bed, unless it were annealed later.

On this cooling bed, however, the annealing is automatically done in process between the mill and the shear, this result being accomplished by accumulating

quires packing, it advances the rolled product in single bars, substantially like any of the other Morgan mechanical beds.

Control of all the motors operating the constituent parts of the bed, as well as the rollers of the runout table, is concentrated in a switchboard attached to the side wall at a height of several feet above the top of the inclined rack. The motors operating the horizontal carryover portion of the bed are capable of lifting 150,000 lb. of bars. The whole arrangement by which bars can be handled separately in notches, or in packs as desired, has been patented by the Morgan Construction Co.

A Morgan No. 5-Q motor-driven shear handles the product of the entire mill. The length of the knives is



In the Foreground Are the Fifth and Sixth Roughing Stands, Grouped Close Together. The intermediate and finishing mills, staggered "duo-type," appear in the middle background, with the special pack cooling bed in the distance (upper right corner of cut)

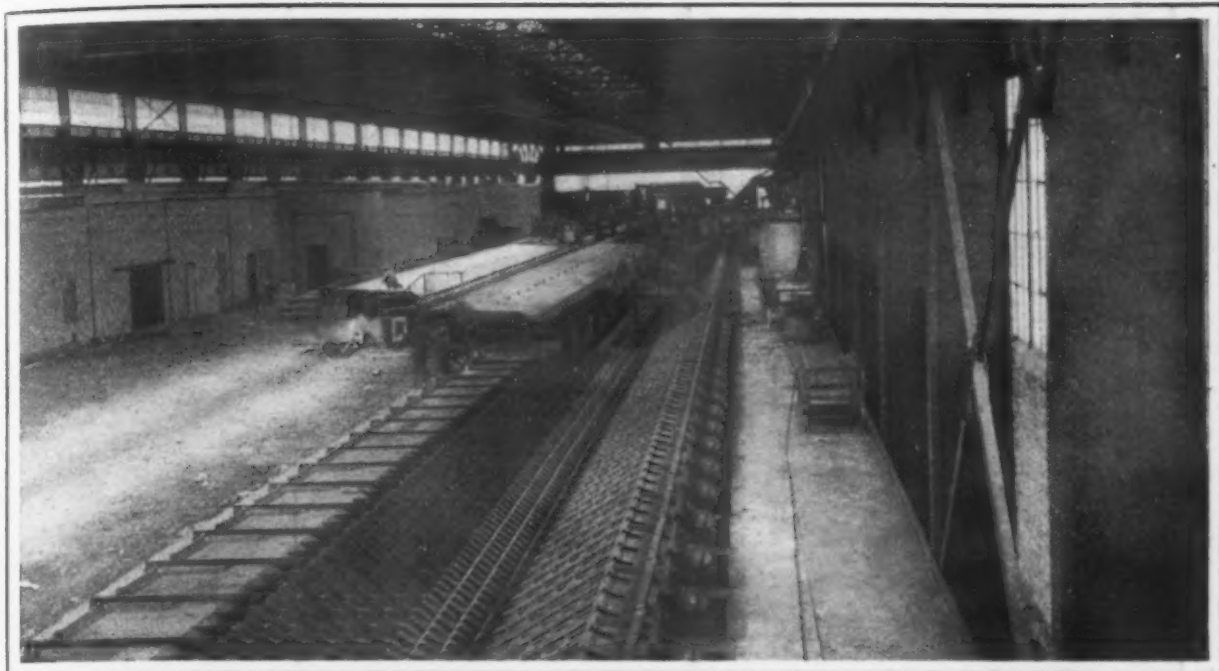
the bars in the packing device and depositing them in packs in the first notch of the horizontal portion of the bed. The rolled bars may reach this point at varying degrees of temperature, depending upon the length of time they are allowed to take in passing over the inclined portion of the bed. The principle of packing bars is not new, as it has been used before on hand-cooling beds, but mechanical packing as executed in this installation is an innovation. The packing device extends the entire length of the bed, and will handle spring flats from 1½ to 6 in. wide.

When cooling flat rolled spring stock, the horizontal portion of the bed advances the packs by lifting and carrying them from notch to notch until, after leaving the last notch, they are discharged upon the shuffle bar assembling table, and are ready to go to the shear. When the cooling bed is not handling material that re-

quires packing, it advances the rolled product in single bars, substantially like any of the other Morgan mechanical beds. The shear delivers the cut lengths to a 65-ft. back shear table, complete with gage bar and hand-traversed gage heads. An electrically-operated kickoff discharges the cut material into a cradle, which is mounted on a scale platform, having a capacity of 60,000 lb. The beam scale and platform were furnished by Fairbanks, Morse & Co.

From the scale the finished material is carried by overhead crane to a depressed loading track, located on the opposite side of the building and running parallel with the cooling bed. The track is 300 ft. long, thus insuring ample space for a supply of cars for shipment.

A novel and interesting part of the cooling bed is the hot runout table. Each of the 93 rollers is individ-



Throughout the Length of the Cooling Bed the Run-out Table Has Cone Rolls, Each Driven by a Variable Speed Motor. Roll and motor are swiveled. By changing the axis of the shaft connecting them, material is carried broadside across the face of the roll and lifted into the first notch of the inclined cooling bed

ually driven by its own motor, the motors being $\frac{1}{2}$ -hp. capacity each, and using alternating current. Their speed can be varied from 370 to 210 r. p. m., with a range in frequency from 26 to 14 cycles. Brief details of the drive of these rollers, as well as of the main rolls, will be given next week.

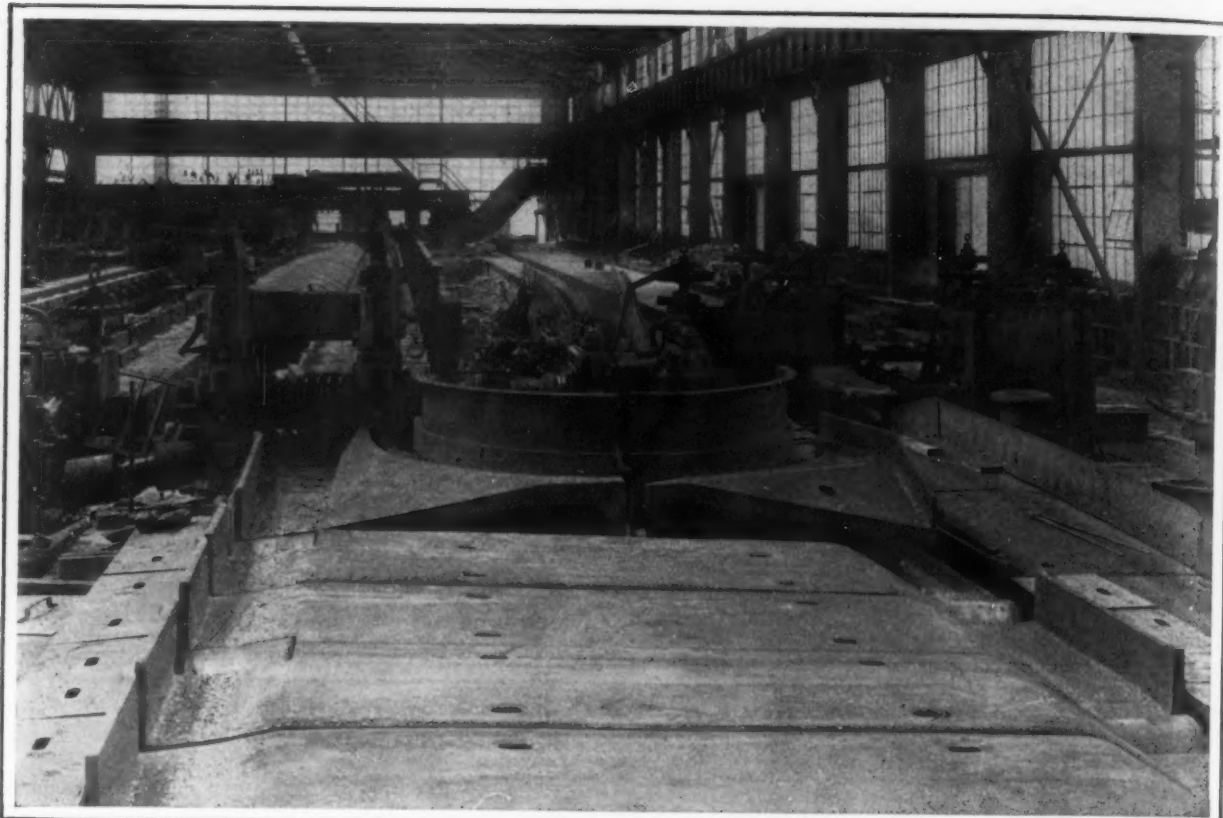
From finishing mill to cooling bed the rollers in the table are of standard cylindrical type. Throughout the entire length of the cooling bed, however, cone rolls have been provided. Each cone roll and the motor oper-

ating it is swiveled on a vertical arm. In normal position the cone rolls throw the bars against a guide. Thus, bars can be delivered from the finishing mill practically at butt ends, and when one bar is thrown against the guide, the succeeding one takes its place, and is likewise diverted toward the guide.

To deliver the rolled bars from the runout table to the escapement portion of the cooling bed, the direction of the integral axes of rotation of the rolls and motors is changed, so that the material is carried broadside



All But the First of the Six Roughing Stands Show Here, with the Last Four Grouped in Pairs, Thus Shortening the Runs and Permitting Better Control of Finishing Temperatures



Material May Pass from the Intermediate (14-In.) Mill to the (12-In.) Finishing Mill Either by Transfer Table or by Repeater. In this view, the repeater was not adjusted for use

across the face of the rolls to the small end of the cones, where it is lifted off into the first notch of the bed. The rolls and motors are brought back to normal position by a spring return.

The merchant mill itself is of the well-known Morgan combination of continuous and staggered duo-type. It contains six 16-in. continuous roughing stands, two 14-in. intermediate stands and four 12-in. finishing stands, the 14-in. and 12-in. stands being staggered. The six roughing stands are driven from a line shaft by gears from a constant speed three-phase, 60-cycle, a. c. 1500-hp. Allis-Chalmers Mfg. Co. induction motor, having a speed of 78 r. p. m. The last four of these six stands are tied together in pairs. This arrangement shortens the runs, with the result that better control of finishing temperature is possible. Temperature control is important, particularly in rolling some alloy products, such as chrome spring steel.

The finishing mills have capacity to roll rounds from $\frac{5}{8}$ in. to 3 in. in diameter, equivalent sections of squares and ovals, and flats up to 6 in. wide. On the 14 in. mill, rounds from $1\frac{1}{8}$ in. up to 3 in. in diameter, and squares and flats of equivalent weight per foot, may be finished. The construction of the finishing mill is two-high throughout, and the speeds of the various roll stands are proportional, to take up the growing length of the rolled bar. From the last stand of the roughing mill, material is carried by transfer to the first stand of the 14-in. mill, and thence by transfer to the last stand of the 14-in. mill.

From the latter stand, material is carried to the first stand of the 12-in. mill, either by transfer or by repeater. The repeater is easily adjusted into position, and is generally used in handling material of small cross section, such as small rounds and squares. After steel has been carried through the first stand of the 12-in. mill, it is passed on to a special "Y" skew roll table which delivers it in proper position to the next pass. The remaining passes are connected with the same kind of tables, but of progressively greater length. When rolling light sections these tables are not employed, but instead, the material is looped from stand

to stand, for which purpose provision has been made in the table construction.

At present, when material is finished in the 14-in. mill, it has to pass through the idle 12-in. stands, taking the same course it would pursue if the 12-in. mill were being used, and passing on to the runout table for delivery to the cooling bed after leaving the last idle stand. In the future, however, it is planned to add another cooling bed parallel with the present one, to serve the 14-in. mill exclusively. This would permit of the delivery of material direct from the 14-in. mill to the bed.

The new merchant mill is served by two Morgan Construction Co. gravity-charge continuous heating furnaces, with hearths 13 x 34 ft., and fired by gas from two Morgan 10-ft. producers. Heated billets from the furnaces are carried by a billet conveyor to a motor-driven dividing shear, capable of shearing up to 6 x 6 in. hot. From the shear, billets are conveyed to the first stand of the 16-in. roughing mill. Adjacent to the furnaces is a billet storage yard, with a capacity of 15,000 tons, which is served by a 10-ton Morgan Engineering Co. traveling magnet crane.

On the other side of the main building containing the furnaces is a leanto, in which are located the gas producers, a cracked coal pit, the Link-Belt Co. coal crusher, and pits for uncrushed coal, ash and scale. This department is served by a 10-ton Morgan Engineering Co. bucket crane, which elevates coal from the coal pit to the crusher, and from the crusher to the top of the gas house, and also loads ashes and mill scale. Coal for producer use is dropped direct from railroad cars through a trestle into the uncrushed coal pit.

Adjacent to this coal pit is the concrete scale pit, into which the mill sewers are drained. The scale is dug out of the pit and loaded into cars by the overhead crane. The installation of the scale pit in a separate building is a departure from the usual practice, as ordinarily mill scale is handled in the main building.

The main mill structure is 105 x 900 ft., with con-

crete foundation, brick and concrete trim and continuous sash in the side walls. The roof is of the Pond type. Three walks hung under the monitor, extending the whole length of the building, are used for operating the windows and cleaning the glass; these walks are served by a stairway at each end. The roof is of tile furnished by the Federal Cement Tile Co., Hammond, Ind. The building has two Morgan Engineering Co. 15-ton overhead traveling cranes.

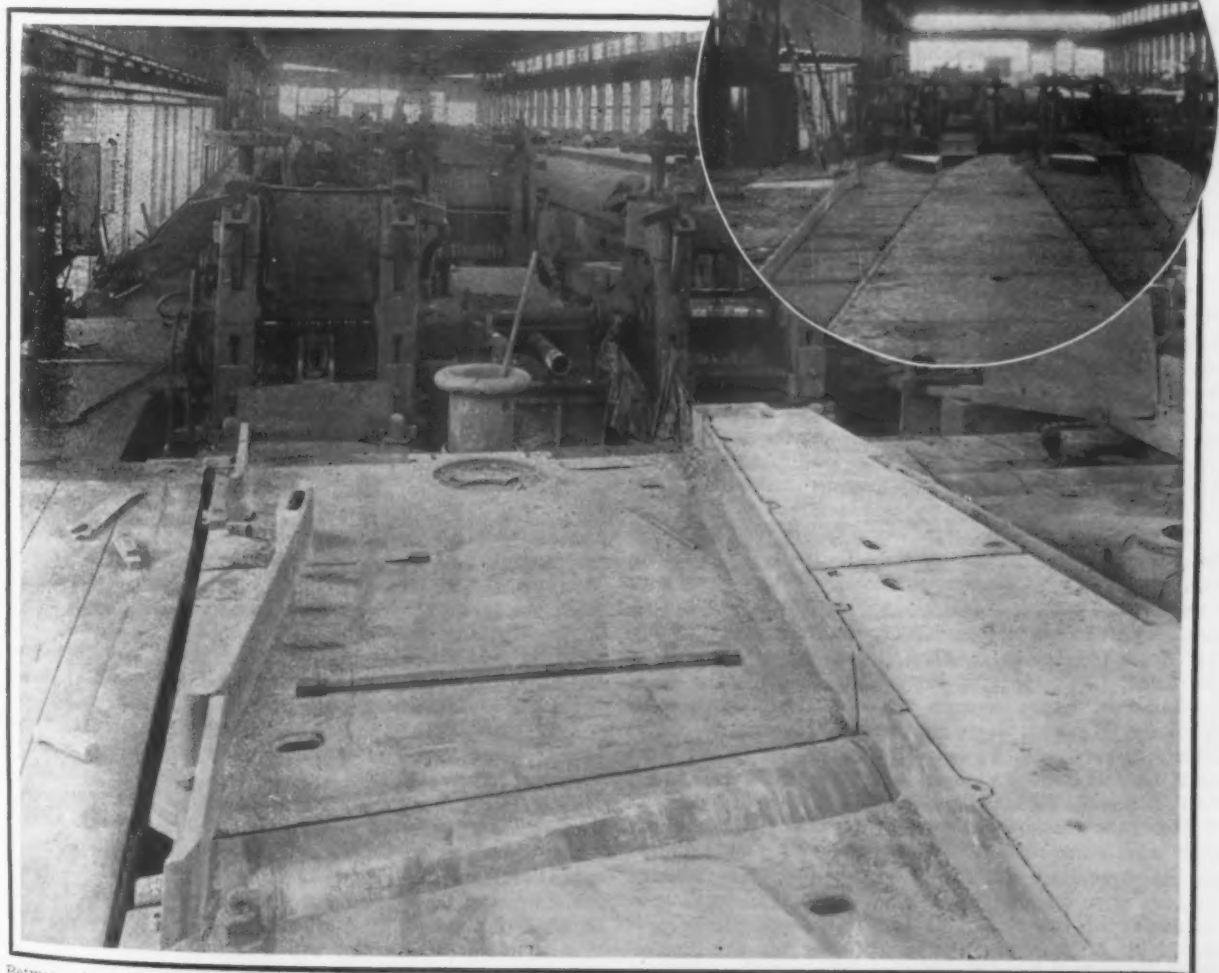
Water is supplied by a new pump house, containing two 4,000,000 gal. per 24 hr. centrifugal pumps, constructed by the A. S. Cameron Steam Pump Works, New York. Each pump is driven by a 125-hp. a. c. motor. A pump of similar capacity and design, but connected with a d. c. motor, is held in reserve for use in case of an interruption in alternating current. Water is drawn from the Calumet River, and power-driven revolving screens furnished by the Chain Belt Co., Milwaukee, prevent floating debris from entering the pipes. Floating on the line is a 100-ft. standpipe of 250,000 gal. capacity. It is estimated that water from the standpipe will carry for 45 min. the heating furnaces, open-hearth furnaces and other equipment in which the water supply must not be interrupted. During that time the pump operated by d. c. motor can be put into operation, thus insuring a continuous water supply.

It is expected that the new merchant mill will have a capacity, when running full, of upwards of 120,000 tons of carbon and alloy steel bars per year. Billets for rerolling are furnished by the adjoining blooming mill, which constitutes a part of the original works purchased by the Interstate company in December, 1916, when it took over all of the properties of the Grand Crossing Tack Co. At that time the South Chicago plant consisted of two Wellman stationary open-hearth

40-ton furnaces, two four-hole soaking pits and a 35-in. blooming and billet mill, with an annual capacity of 55,000 tons of ingots and 50,000 tons of small billets.

Since that time the two original open-hearth furnaces have been increased in capacity to 60 tons each, and four additional 75-ton furnaces have been constructed, two of them just recently. The two original four-hole soaking pits have been supplemented by three other four-hole pits, making a total of five pits and 20 holes. The building is equipped with one modern stripper crane; a 7½-ton stiff-legged Morgan Engineering Co. charging and drawing crane has recently been added. The annual capacity of the steel works is now 250,000 tons of ingots.

Other new equipment includes an ingot chariot or car, used to deliver ingots from the pits to the blooming mill approach table, either butt first or top first. The car, which is of unique construction, was designed by the Interstate Iron & Steel Co. and built by the Morgan Engineering Co. It is similar to a roller table, having five 12-in. diameter rollers, mounted on a steel frame carried on six steel wheels running on a 3-ft. gage track. Both the rollers and the car wheels are driven through gears and a clutch by one reversing motor equipped with a brake. The rollers are operated in either direction, through the clutch, engaged by a solenoid and disengaged by a spring, which then engages the clutch with the car wheels and vice-versa. The ingot cannot be rolled from the car until it is in



Between the 12-In. Stands Are Special "Y" Skew Roll Tables. The skew rolls (one shows in foreground) deflect material to a position on the table from which it will be carried directly into the next stand. The insert shows the triangular deflecting blocks in the skew roll tables, which give them the "Y" shape, and which were not in use when the lower view was taken

position, bumped against the blooming mill approach tables, where the solenoid operating the clutch is permitted to function, being in contact at this one point only.

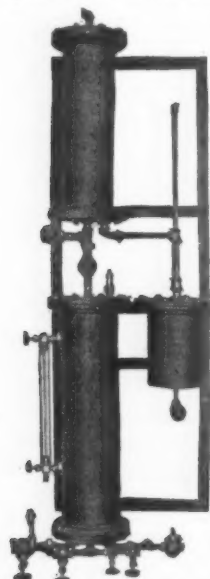
A feature of the Interstate works is the thoroughgoing manner in which it takes care of the inspection of alloy steel billets, preparatory to rolling into bars. A separate building, 85 x 700 ft., is devoted to this work. Billets are first put through a pickling bath, from which they are carried to the inspection and chipping floor by overhead cranes. There are three pickling vats, each 5 ft. wide, 20 ft. long, and 4 ft. deep. These are equipped with hinged counterbalanced covers, and

with ducts which draw off the fumes and discharge them outside the building.

Every billet handled is carefully examined on all sides by inspectors, who chalk-mark seams, laminations and such other structural defects as are incident to the hot rolling of alloy steel. As many as 200 pneumatic hammers are at work at one time, the air being furnished by three direct-connected Ingersoll-Rand air compressors of 1322 cu. ft. capacity. Twelve swingframe grinding machines are used to remove defects from steel too hard to chip. Two overhead electric traveling cranes of 80-ft. span and 10-ton capacity handle billets both to and from the chippers and the grinders.

Wall Set for Distilling Water

An improved evaporator wall set to supply small quantities of distilled water is being marketed by the Griscom-Russel Co., 90 West Street, New York. It has a capacity of from 15 to 30 gal. per hr. depending on the steam pressure available.



For Drinking Water
an Aerating Filter Is
Used

The set consists of an evaporator containing coils of brass tubing and to which steam is supplied. The vapor from the evaporator passes to a distiller and is condensed in the coils of that unit by circulating water which flows through the shell. If the distilled water is to be used for drinking it is passed through an aerating filter, but if for laboratory or manufacturing processes, the filter is omitted.

The evaporator and distiller units are of the Reilly coil construction. The set mounted complete on an angle iron frame with the piping, as shown in the illustration, ready for steam and water connections to be made to it, measures 7 ft. high by 2 ft. 4 in. wide.

that the increase in the cost of production of sheets, due solely to the higher railroad rates, was 104 per cent above the cost of 1914. The report also suggested that the association ask every member to compile comparative freight cost data for the present year and the year 1914, as well as labor cost reductions at furnace and ovens, this information to be placed in the hands of the railroad executives and the Interstate Commerce Commission. At the evening session, which was held at the Columbus Country Club, where the members were also guests of the American Rolling Mill Co., a plan was suggested that two classes of the present 62 members be created; active members to include those members identified with the actual production of coke and pig iron, and associate members, including those residing outside the immediate territory from which the members of the association are drawn.

Portable Electric Drill

The Electro-Magnetic Tool Co., 2902 Carroll Avenue, Chicago, has placed on the market a new ½-in. drill, designed to meet the demand for a low-priced



A Series-Wound, Universal Type Motor Is Used

well-made tool which will fill the requirements of the garage, service station, small machine shop, construction or installation gang. The drill is offered at a price of about one-half of the company's standard line and, in fact, of most high-grade drills of this capacity. A simple and rugged stand makes the tool into a drill press and doubles its usefulness.

The drill itself has a series-wound, universal type motor, with large mica insulated commutator, square brushes with pig tails and an aluminum ventilating fan. The gears are of high quality steel, hardened and ground, and are removable. The spindle shaft is equipped with ball thrust and is made of steel hardened and ground. The bearings are Cramp special bearing bronze. A positive standard make switch gives control of the tool, and all connections are made in the switch box, the cover of which is removable and allows for reconnection or changing lead cords without opening the tool. The commutator may be inspected and the brushes removed by taking off a cover plate.

Southern Ohio Pig Iron and Coke Association

The fourth annual meeting of the Southern Ohio Pig Iron and Coke Association was held at Columbus, Ohio, on Sept. 28. The principal business was the election of officers for the coming year and an interesting report from the traffic committee on railroad freight rates and their relation to the costs of production of pig iron and coke in the southern Ohio district. The association members were the guests of the American Rolling Mill Co. during their stay in Columbus.

The officers elected for the coming year are as follows: President, Ralph H. Sweetser, American Rolling Mill Co., Columbus, Ohio; first vice-president, Charles R. Peebles, Ashland Iron & Mining Co., Ashland, Ky.; second vice-president, W. N. Jeffries, Hanging Rock Iron Co., Hanging Rock, Ohio; third vice-president, L. D. Heustis, Portsmouth Solvay Coke Co., Portsmouth, Ohio; fourth vice-president, Morris M. Wheldon, Wellston Iron Furnace Co., Wellston, Ohio; fifth vice-president, Joseph F. Savage, Hamilton Furnace Co., Hamilton, Ohio; secretary and treasurer, F. P. Colville, Eaton, Rhodes & Co., Ashland, Ky.

The first session was held in the Columbus Athletic Club where the members and guests were entertained by the American Rolling Mill Co., and after routine matters were disposed of, the session was devoted to a discussion of the report of the traffic committee presented by J. L. Roney, traffic manager for the American Rolling Mill Co. Mr. Roney's report included some data recently compiled by his company with reference to its sheet making department. The figures disclosed

Are Iron and Steel Prices Out of Line?

American Rolling Mill Co. Makes Statement
of Cost of Manufacturing Sheets in 1914 and
1921—Quotes Statement of President Grace

“ARE Iron and Steel Prices Out of Line?” is the title of a pamphlet which has just been issued by the American Rolling Mill Co., Middletown, Ohio. It reads as follows:

“During the last nine months there have been drastic reductions in the prices of iron and steel. In spite of these reductions, it seems to be the general impression that the price of sheets is still high and has not taken a drop in proportion to other commodities. Such an impression is incorrect. The base price of steel black sheets to-day, when compared to actual cost of production, is a great deal lower than it was during 1913 and 1914.

“The three principal factors governing the cost of iron and steel are the cost of raw materials (including fuel), of transportation and of labor. Raw material and transportation costs are entirely beyond the control of the manufacturer.

“Only in the item of labor can the manufacturer be influential in reducing costs, and reductions in labor rates must necessarily be slow. To-day wages and salaries in the steel industry have been liquidated further than in any other industry.

“A very recent analysis of cost figures brings forth

Selling Prices and Manufacturing Costs of a Net Ton of Sheets—1914 Compared with 1921

	1914	1921
Selling price of sheets per net ton.....	\$40.00	\$60.00
Increase per ton		\$20.00

Analysis of Costs as of August 31, 1921

	1914	1921	Increase per Ton of Materials	Increase per Net Ton of Sheets
Pig iron per gross ton.....	\$12.89	\$20.00		
Freight	1.00	2.10		
War tax .....	.00	.06		
Total	\$13.89	\$22.16	\$8.27	\$5.79
Foreign scrap per gross ton	\$6.88	\$6.71		
Freight	1.90	3.92		
War tax .....	.00	.12		
Total	\$8.78	\$10.75	1.97	.50
Limestone per net ton ..	.15	.20		
Freight	1.00	2.00		
War tax .....	.00	.06		
Total	\$1.15	\$2.26	1.11	.38
Coal per net ton.....	.93	\$2.50		
Freight	1.15	2.24		
War tax .....	.00	.07		
Total	\$2.08	\$4.81	2.73	5.31

*Increased labor cost per net ton of sheets, 1914 to 1921 10.07

†Grand total

*Tonnage and hourly labor only. No salary costs included.
†Note that this total covers only the principal items of cost. Hundreds of other items would have to be included to make a complete analysis

rather startling information which we believe will be of interest to everyone using and dealing in iron and steel sheets. The table accompanying this bulletin shows graphically the increases in the cost of the most important items entering into the manufacture of a net ton of sheets.

“Besides the items shown in the table, there are proportionate increases in the cost of refractories, brick, lumber and the hundreds of other materials of maintenance necessary for the operation of a steel plant. Furthermore, taxes and other overhead charges are higher now than they were during 1913 and 1914.

“When manufacturing costs are considered, it is quite evident, from the figures given herein, that sheets to-day at \$3 per 100 lb. base are much lower in price than they were in 1913 and 1914 when the low price of \$2 per 100 lb. was reached.

“The prices of Armco ingot iron black and galvanized sheets and special grades of steel sheets, such as automobile body steel, furniture steel, etc., are based upon the price of steel black sheets. The price differentials for these grades are more or less standard and have varied little during the last several years. Manufacturing costs for producing these special grades have also increased and so, when compared with pre-war prices, to-day's prices for all grades of sheets are not only lower than in 1914 but very, very much lower.

The following is quoted from a brief presented to the Senate Finance Committee, on Aug. 25, 1921, by W. H. Abbott, vice-president Wheeling Steel Corporation, in behalf of the independent manufacturers of sheet steel:

“Directly and indirectly, not less than 80 per cent of the total cost of producing steel sheets in this country, is in the item of labor. The increase in cost per ton between 1912 and the first quarter of 1921 is shown by the following schedule:

Actual Average Cost of Labor Producing Common Black and Blue Annealed Steel Sheets per Net Ton

	Year, 1912	First Quarter, 1921
Producing labor	\$13.28	\$22.86
Labor repairs and maintenance....	.43	1.20
Total	\$13.71	\$24.06

A difference of \$10.35—equaling an increase in labor costs over 1912 of 72 per cent.”

“The 1914-1921 increase of \$10.07 in the labor cost of a net ton of sheets, shown in the above analysis of cost table, checks very closely the \$10.35 increase in cost from 1912 to the first quarter of 1921 shown in Mr. Abbott's brief.”

Effect of Freight Rates on the Cost of Steel

“Mr. Grace, president Bethlehem Steel Co., has made a statement explaining that if allowance is made for the increase in costs due to railroad charges, steel products are now lower than before the war. In announcing new and lower prices for steel products going into effect on July 5, last, Mr. Grace said:

The increase in freight rates has been the largest factor in increasing the cost of manufacturing steel products because the making of a ton of finished steel involves the transportation of more than five tons of raw materials. The cost factors next in importance are materials and labor.

Taking as an example the price for structural shapes, under the new schedule of prices, 2 cents a pound or \$44.80 a gross ton, the comparison with pre-war prices, reflecting concretely the three more important cost factors is as follows:

1st: The increase over pre-war cost in transportation on ore, coal, limestone, scrap and miscellaneous supplies amounts to \$7.85 per ton of finished steel.

2nd: The increase in the cost of coal, ore, limestone, alloys, refractories, lubricants and miscellaneous supplies at point of shipment amounts to \$7.10 per ton of finished steel.

3rd: The increase in the cost of labor under the present wage scale, as compared with pre-war wages in the steel plant proper, is \$5.64 per ton of finished steel.

These items account for an increase in present day costs over pre-war costs of \$20.59 per ton of finished product. The new price of \$44.80 for structural steel is equivalent to a pre-war price of \$24.21 per ton, or 1.08 cents per pound.

Statistics covering the last twenty years show that in only one month (December, 1914) has structural been sold as low as this figure (1.08 cents). The ten-year pre-war average (1904-1913) was 1.51 cents per pound.

The figures I have used are the result of actual compilation made by the company's comptroller in the every-day conduct of the business.

“Structural steel and sheet-bars compare very favorably as to costs. Sheet manufacture starts with the sheet-bar. Considerable labor is required in converting

sheet-bars into sheets and the greater part of this additional labor is highly skilled, requiring high wages.

"Transportation and fuel costs must be very materially reduced if the present prices of iron and steel sheets are to be maintained."

Earnings of Workers in Different Industries—Earnings in June, 1921, in Comparison with Highest Wages Received

	Pay Period	Highest Period Earnings	Earnings in June 1921	Percentage Decrease from Peak
Iron and steel.....	½ mo.	\$80.05	\$43.90	45.1
Auto manufacturing	week	36.69	32.78	18.7
Car building and repair	½ mo.	76.98	66.31	13.8
Cotton manufactur- ing	week	23.71	17.56	25.8
Cotton finishing...	week	27.33	22.40	18.1
Hosiery and under- wear	week	21.71	16.58	24.1
Woolen goods	week	26.81	23.40	12.7
Silks	2 weeks	48.53	44.51	8.2
Men's clothing....	week	35.71	30.09	15.7
Leather	week	27.80	23.05	13.5
Boots and shoes....	week	25.07	23.33	6.9
Paper making	week	30.38	24.53	19.2
Cigar manufacturing	week	22.89	19.47	14.9

(The above taken from a Department of Commerce bulletin.)

Comparison of Percentages of Wage Reductions in Various Industries

Sheet mills*	38.6 per cent
Railroads	12 per cent
Street cars	10 to 12 per cent
Building trades	12.5 to 25 per cent
Coal mining	00 per cent
Metal manufacturing industry.....	17.5 per cent
Glass workers	12.5 to 15 per cent

*Taking into consideration September settlement.

Belgian Pig Iron and Steel Production

Pig iron production in Belgium during the first seven months of 1921 shows a steady decline from 112,330 metric tons produced in January to 45,330 metric tons in July. In January, 26 blast furnaces were in operation, and on July 21 the number had fallen to 14. The average number of furnaces in blast per month in 1913 was 54, averaging a monthly production of 207,058 tons.

	Furnaces in Operation	Output, Tons
Hainaut, July	6	21,400
Liege, July	5	16,340
Others, July	3	7,590
Total, July	14	45,330
June	18	68,510
May	21	75,290
April	22	96,230
March	24	106,360
February	26	105,390
January	26	112,330
	Monthly Average	
1920	28	93,033
1919	13	20,881
1913	54	207,058

Production at Steel Works and Iron Rolling Mills

	Pig Iron Output	Steel Works Castings	Finished Material	Iron Works Finished Material
Hainaut, July...	10,390	2,090	19,940	8,730
Liege, July.....	9,370	400	15,270	300
Others, July....	4,430	610	3,720	1,560
Total, July...	24,190	3,100	38,930	10,590
June	49,230	5,850	63,100	12,410
May	57,950	5,830	64,930	11,270
April	103,140	7,270	91,940	13,290
March	91,240	6,630	93,430	10,960
February	93,310	6,400	86,370	12,270
January	114,360	6,590	93,280	18,230
	Monthly Average			
1920	99,366	5,060	94,311	13,487
1919	26,822	983	28,513	5,741
1913	200,398	5,154	154,922	25,362

The program of the twenty-eighth annual convention of the National Implement and Vehicle Association, to be held at the Congress Hotel, Chicago, Oct. 12 to 14, inclusive, includes speakers of national prominence, among them: Hon. Henry C. Wallace, Secretary of Agriculture; Hon. Herbert Hoover, Secretary of Commerce; Hon. W. P. G. Harding, Governor Federal Reserve Board; Gen. W. W. Atterbury, vice-president Pennsylvania Railroad; and William H. Barr, president National Founders' Association.

CENTRAL STEEL CO. FORMED

Merger of Three Massillon Companies Completed—Details as to Products

Steel mill properties with combined assets estimated in excess of \$20,000,000 have been brought together in the merger announced by THE IRON AGE of Aug. 25, of the Central Steel Co., the National Pressed Steel Co. and the Massillon Rolling Mill Co., all of Massillon, Ohio.

The new corporation, it is announced, takes the name of the Central Steel Co. and the following officers have been elected: Chairman of the board of directors and president, R. E. Bebb; first vice-president, F. J. Griffiths; second vice-president, C. C. Chase; third vice-president, H. M. Naugle; secretary and treasurer, C. E. Stuart.

The reorganized company has outstanding 300,000 shares of no par common stock and \$10,000,000 of preferred stock. The merger of the three companies brings the Central Steel Co. into prominent position among the large steel producing corporations of the country with complete modern equipment and facilities for producing all kinds of commercial alloy steels, hot and cold-rolled sheets, hot-rolled strip steel and light structural steel sections in a combined annual output of 450,000 to 475,000 tons of finished material.

The Central Steel Co. brought to the merger 10 open-hearth furnaces of 65 to 75 tons capacity, 34-in. blooming mill, 24-in., 18-in. and 12-in. finishing mills, 24-in. sheet bar mill, cold-drawing and heat-treating departments and a record of being the largest producer of strictly alloy steels in United States. The Central company annual product runs from 300,000 to 325,000 tons.

The National Pressed Steel Co., which will function in the future as a division of the Central Steel Co., is a producer of hot-rolled strips and plates and finished structural steel joist sections with a present capacity of approximately 100,000 tons annually. Equipment is all modern and includes slab furnaces, annealing furnaces, complete pickling and finishing facilities, electro-driven hot-rolling mill with gage range from No. 15 to 1 in., widths up to 24 in. and lengths up to 130 ft., cold-forming steel lumber section mills, electric welders and other equipment for furnishing steel lumber finished and painted ready for use.

The Massillon Rolling Mill Co., which also will be operated as a division of the Central Steel Co., brings to the merger 12 hot sheet mills, 16 cold sheet mills, 18 annealing furnaces and complete equipment and facilities for turning out a complete line of sheet steel. Several new buildings and new machinery were recently added to this property, most of which was just put in operation last March. The plant as it is operating produces approximately 50,000 tons of sheet products annually and the arrangement is such that an increase of 50 per cent in production can be achieved without additional buildings or power equipment. The Massillon Rolling Mill plant was designed and functions especially as a producer of sheets for the automotive industry, though sheets are also produced for metal furniture, enamelware, and the general sheet trade. The gage range is 11 to 30, widths up to 48 in. and lengths up to 120 in. on the lighter gages. Complete facilities are available for pickling, annealing, cold rolling and all sorts of finishes.

All trades and industries have been asked to cooperate in the "Perfect Package Movement" to be inaugurated by the railroads, steamship lines and express companies in the United States and Canada, in November, which has been designated as "Perfect Package Month." The purpose of the movement is to stimulate further public interest in good packing of shipments and to enable the carriers to improve the transportation service of the country. During November, an examination of all shipments sent by freight or express, will be conducted, to obtain information as to the best shipping methods carried on by the various trades and industries.

Maladjustments in the Industrial World

Economic Law Not Suspended by the War—No Time for Any Group to Assert Itself Selfishly—Problem of Unemployment Considered by a Keen Observer

—BY WALTER DREW*

THE war left industry in a condition of inflation, chaos and maladjustment. The Government ceased to be paymaster, abdicated responsibility, and turned the jumbled mass back to private management to straighten out. The Government under wartime necessity discarded all economic considerations to secure immediate results and taxed the people to pay the bill. Private industry must now make good wartime loss and pay wartime obligations, but in doing this it cannot, like the Government, ignore economic laws. It must produce for these purposes, but its production must also conform to recognized and established principles. The private employer must produce at a price which will enable his goods to find a market.

Economic law was not suspended during the war. It kept on working. It is working now, and it is the one law that cannot be repealed or modified. The sooner private industry, therefore, is able to conform itself to the essential requirements of economic law, the sooner it will be in a position to take up and bear the heavy burden laid upon it. Our law-makers should learn first of all that they cannot repeal or change these essentials and that any measures they may adopt contrary to them will only retard and delay the nation's return to a healthy basis.

All in the Same Boat

This is no time for group or class interest to assert itself selfishly. We are all in the same boat and no separate interest can gain any advantage over others at this time without injuring itself. One of the first and most important matters to be corrected is the maladjustment of different branches of industry. The farmer and some other groups have already gotten down to nearly the pre-war level of production and prices. The farmer, getting only 13 per cent more for his products than before the war, cannot buy the products of an industry priced at 100 or 200 per cent more than pre-war prices. This is one example of the result of maladjustment. The farmer ordinarily is the nation's greatest buyer. His demand for the products of other industries and for the services of labor to make those products will remain at a standstill until those industries have come into line with him in the matter of liquidating costs and prices.

Another instance of maladjustment is the railroads. While they are getting a high return for service, they were left with a legacy of wartime expenses for both materials and wages which have kept them in the poverty class. According to estimates made prior to 1914, the railroads in normal times use directly and indirectly 40 to 50 per cent of the iron and steel products of the country. Now they can only live from hand to mouth, and the workers who would ordinarily be making things for the railroads to use are idle because of the lack of railroad buying power. Also, until the expenses of the railroads are much more greatly reduced, freight rates of practically prohibitive amounts must be continued in force, laying a burden upon all productive industry and most of all upon the farmer who can bear it the least.

Another instance of maladjustment is the coal situation. Under agreements which do not expire until the spring of 1922, a wage cost for coal is entailed which keeps the price of that universal essential in production and transportation at an excessive and un-

reasonable figure. This high cost of coal, like high freight rates, is a great burden upon production, preventing the manufacturer from reducing his costs to a level that will move his goods and, of course, preventing him also from giving employment to workmen.

Employer Not Real Wage Payer

The first great fact in employment is that it is not the employer who is the real wage payer. It is the consuming public which hires the worker and pays him for his services. But there are forty-five million wage earners in the country, and when to this number their families and dependents are added, it is evident that workers themselves constitute a very large majority of the consuming public. In other words, it is the worker who pays the wages of other workers to make things for his use. The employer is a mere middleman between the buying public and the worker. He is a salesman, as it were, of the worker's services and he cannot sell that service any more than he can any other commodity if the public refuses to buy at the price demanded. It is not in the option of the employer to give employment. It is his function only to interpret so far as he can the public demand for materials and service and to undertake to supply that demand, paying the penalty if his guess does not prove right.

Labor Cost

Another vital fact is that labor cost constitutes the great bulk (according to some economists as high as 85 or 90 per cent) of the cost of the finished product in its progress from the raw state to the final consumer. The lesson of this is clear. There can be no general liquidation of costs and a return to a normal basis, and there can be no correction of the maladjustments between the different branches of industry, until labor cost has been generally liquidated, not in one but in all fields of industry. So long as this is not done, there will be abnormal and unequal conditions remaining, which to the extent to which they exist, will retard the return to a normal basis. In building, for example, the workers insist that so long as building materials remain high building labor should not be reduced, yet the chief cost of making, handling and transporting building materials is labor cost. We have several years of back construction to make up. Mr. Hoover estimates a million and a half homes are needed, and probably seven to ten billions of dollars await investment in building when those who build or who loan money for building can be assured that the investment will be upon a basis where it will not show a future loss.

All of these conditions—on the railroads, in the mine fields, in the building situation and others—are artificial and are therefore possible of correction. They cannot be corrected, however, if individual groups are going to assert their selfish interests to the detriment of the common good. Unless there is unselfish, common and united action, we will have to await the slow but inevitable workings of economic law, paying a bitter and unnecessarily high price for our lack of collective intelligence and regard for the common welfare.

This is no time for petty politics. If the party in power does not see and act upon the necessity for a broad, statesmanlike view of the situation, it will most surely be held to account. Its one hope of continuance in power is to recognize in the largest possible way its responsibility for action in the nation's interest and in accordance with fundamental economic principles. Above all, management, to which has been shifted since the war the responsibility of bringing order out of chaos under most adverse conditions, must be permitted

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to function without undue limitation or unfair attack. Aside from tax and revenue legislation, which will help and not cripple industry, there is one field especially where wise legislation can be of great and immediate benefit, and that is in connection with the railroads. If this great basic industry, whose service is essential to all other industry, can be permitted to function on a basis of efficiency with proper freedom and proper responsibility on the part of railway management, a lowering of freight rates and renewal of railroad buying may be confidently looked for. Business men and the public generally are no longer sympathetic with unjust attacks upon the roads. Their sins were in the past

and have been more than atoned for. Now it is time to free them to the extent that they may render full service to the country and their securities again be the foundation stone of our financial system.

Emergency measures in the way of public expenditures to relieve present unemployment should not obscure the real situation. In some ways such measures while just and necessary add to the problem, for the nation's productive industry is called upon to bear indirectly the cost of labor when the demand for marketable products is not such as to enable it to employ such labor directly. England has shown us that such a course cannot be continued indefinitely.

TAX REVISION BILL

Important Provision of the Measure as Reported By Senate Committee on Finance

WASHINGTON, Oct. 3.—The tax revision bill of the Senate Committee on Finance, which, according to the majority report, will raise \$3,324,000,000 in revenue for the fiscal year ending June 30, 1922, takes into account an anticipated shrinkage of more than \$1,000,000,000 in income and excess profits taxes. The sum it is estimated will be raised is \$136,000,000 less than experts of the Treasury have figured would be returned this fiscal year under the present law, but exceeds by \$84,000,000 the revised total under the House bill. Efforts are to be made to pass the bill in the Senate within two or three weeks, but because of opposition it is a matter of speculation as to how much success the supporters of the measure may have in bringing about its enactment as quickly as they hope. The measure was taken up in the Senate yesterday for consideration.

As pointed out by the majority report, the most important changes recommended by the Senate committee from the standpoint of revenue are:

The repeal of the excess profits tax, which would reduce the revenue about \$400,000,000 annually; the repeal of the surtaxes in excess of 32 per cent, involving an immediate loss of from \$80,000,000 to \$90,000,000 a year; the repeal of the capital stock tax, involving an annual loss of about \$75,000,000; the reduction of the transportation taxes by one-half on Jan. 1, 1922, and their final repeal as of Dec. 31, 1922, involving a reduction of \$131,000,000 during the calendar year of 1922, and an eventual loss of \$262,000,000 per year; and the adoption of an additional income tax upon corporations of 5 per cent, which would increase the revenue about \$260,000,000 annually.

Reasons for repeal of the excess profits tax, in the opinion of the committee, have been set forth so completely from time to time that "the time for discussion is past and the time to repeal the tax has arrived."

With regard to the surtaxes, the report says:

"Your committee recommends a reduction of the maximum surtax from 65 per cent to 32 per cent in the belief that in the near future the lower surtax will, by stimulating sales and profit taking, and by making possible transactions now blocked by excessive surtax rates, not only facilitate needed business readjustments, but actually increase the revenue. In the long run, in the opinion of your committee, the 32 per cent rate will yield more revenue than the 65 per cent rate."

This Year's Returns

The report estimates returns this fiscal year from income and profits taxes at \$1,880,000,000 as against approximately \$3,000,000,000 of actual collections in the fiscal year ended last June 30.

It is declared in the report that the committee has acted on the assumption that, with the exception of the special railroad expenditures, which will be nearly if not wholly completed in the fiscal year 1922, the aggregate expenditure for the fiscal year 1923 will be substantially as large as in the fiscal year 1922. The special railroad expenditures included in the 1922 budget amount, in round figures, to \$500,000,000; and the receipts from customs and miscellaneous sources for the fiscal year 1922 are estimated at \$730,000,000. Deducting both amounts (\$1,230,000,000)

from the total estimated expenditures of 1922 (\$4,034,000,000) leaves in round figures \$2,800,000,000 to be supplied by internal taxes for the fiscal year 1923.

"The revenue bill as recommended by your committee," says the report, "will raise during 1923, it is estimated, \$2,735,000,000. The difference or deficit of \$65,000,000—about equal to the corresponding surplus for the fiscal year 1922—can and should be avoided, by saving and economies. Your committee deliberately recommends a tax program to meet ordinary expenditures on the present scale, and assumes that a reasonable measure of retrenchment and reductions will be accomplished."

To Relieve the Taxpayer

There is an amendment in section 250 of part 4 of the administrative provisions which is intended to relieve the taxpayer in case of additional assessments made without complete knowledge of all taxes in the case. The new provision, as proposed by the Senate Finance Committee, would extend the time for the payment of deficiencies to 18 months from the passage of the Revenue Act. This change is of vital importance to the steel industry and other branches of trade affected by the decision in the LaBelle Iron Works case.

Paragraph "F" of section 250 makes this provision and authorizes the Commission of Internal Revenue to require taxpayers to furnish a bond with sufficient sureties conditioned upon the payment of deficiencies, in accordance with the terms of extension granted. It is provided that in lieu of other interests provided by law as a part of such deficiencies, the rate of interest on these sums shall be 2/3 of 1 per cent per month from the time the extension is granted, except where such other interest provided by law is interest in excess of the rate of 2/3 of 1 per cent. If the deficiency or any part of it is not paid in accordance with the terms of the extension, the Treasury would be authorized to add, in lieu of other interests and penalties provided by law, the sum of 5 per cent of the deficiency and interest on the deficiency at the rate of 1 per cent per month from the time it becomes payable, in accordance with the terms of the extension. These provisions were drafted to prevent undue hardship to lumber men and others who are obliged to pay back taxes, in accordance with the Supreme Court decision in the LaBelle case.

Decline of Iron and Steel Shipments

WASHINGTON, Oct. 4.—Decline in the transportation movements of iron and steel articles in the United States for the second quarter, ended June 30 of the current year, is sharply reflected when compared with the movement for the same quarter of last year.

The summary of freight commodity statistics of Class 1 roads, just issued by the Interstate Commerce Commission, makes the following comparison in net tons possible:

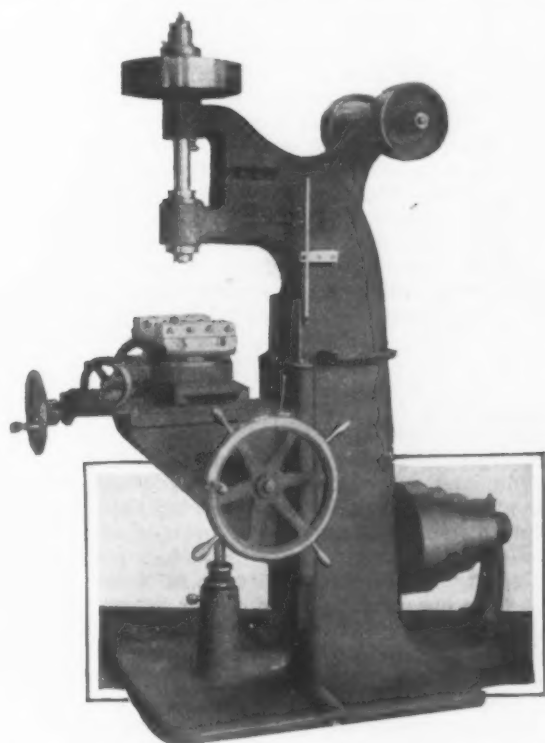
	Second Quarter Ending	
	June 30, 1921	June 30, 1920
Pig iron and blooms.....	1,156,458	3,833,953
Rails and fastenings.....	677,702	681,401
Bars, sheets structural and pipe..	2,906,459	6,433,342
Other metals, pig, bar and sheet..	488,848	1,264,703
Castings, machinery and boilers..	1,093,372	2,483,823

The estimated average weekly wage in Connecticut is \$26.30, as compared with \$32.70 a year ago.

Improves Die Sinking Machine

Improvements intended to effect more convenient operation and easier maintenance have been made in the die sinking machines of the Pratt & Whitney Co., Hartford. The cherrying attachment shown in the illustration has also been recently developed and is offered in connection with the No. 2 and 3 machines.

Among the general improvements it may be mentioned that the driving spindle has been provided with a positive pin lock in four positions so that the chuck or collet can be tightened without holding the driving belt. The spindle pulley has a new system of oil grooving opposite to the direction of rotation so that oil is continually carried upward, providing adequate lubrication without loss of oil. A floating babbitt washer takes the thrust of the cut on the spindle, a system of oil grooving distributing the lubricant evenly over the bearing surface. The main drive cone has been fitted with a hollow spindle, communicating oil holes delivering the oil to a series of felt packed grooves. To protect the ways from chips and dirt, leather wipers held by cast iron caps are attached to the knee.



Improvements include a Positive Pin Lock in Four Positions. Cherrying attachment in non-working position. When working the arm is doweled and clamped to a boss at lower spindle bearing

The vise capacity has been increased for larger work, the vise being strengthened in proportion. A telescopic elevating screw is now furnished in place of the old type of straight screw. The elevating wheel shaft is mounted with a thrust bearing for ease of operation and the outboard bearings for the knee and vise slides have been straightened to eliminate chance of breakage, the slides themselves being grooved and protected with covered oilers to prevent sticking.

The cherrying attachment is pivoted in a bracket attached to the side of the column. When in a working position the arm is doweled and clamped to a boss at the lower spindle bearing and the attachment is said not to interfere with the regular functions of the machine. The backs of the cutter teeth are utilized for driving the cutters. These are made in the form of gear teeth and mesh with a spur pinion. Two pinions, 8 and 12 pitch are furnished to permit varying the tooth space on small and large cutters. Bevel gears transmit the power to the cutter pinion. The end of the machine spindle is threaded to receive the driving gear. The mating driven gear is mounted on the pinion shaft by a friction adjustable for varying conditions.

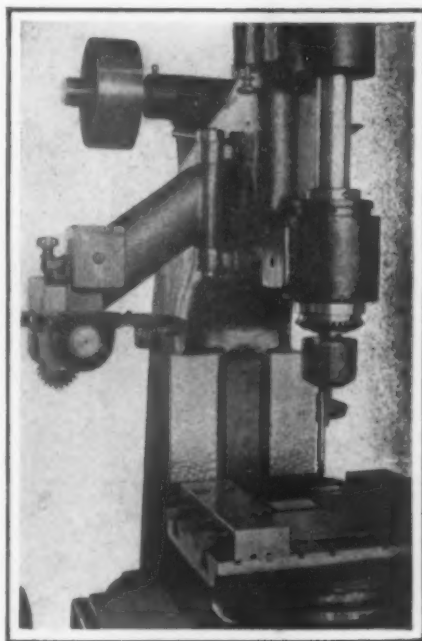
Cutters from 1 to 6 in. diameter can be accommodated. The smaller size cutters are mounted on conical centers, the larger sizes being provided with a comparatively small hole for which cylindrical centers

are utilized. The method of mounting the cutters on centers is such that half of the cutter diameter can be utilized.

Electrifying the Chilean State Railroad

The Westinghouse Electric International Co. recently received final confirmation of a contract to supply equipment to electrify the Chilean State railroad between Valparaiso and Santiago and the Los Andes branch. The contract covers the most important railway electrification undertaken since the beginning of the war and is the largest ever undertaken by an American firm outside of the United States. The main line, which is 116 miles long now is under steam operation and connects the leading seaport, Valparaiso, with the capital, Santiago, while the line to Los Andes is 28 miles long, and forms the Chilean State railway section of the trans-continental line to Buenos Aires. The contract, which has a total value of \$7,000,000, was secured in keen competition with German and other European companies. The equipment to be furnished consists of 11 local passenger locomotives, 15 road freight locomotives, seven switching engines and five sub-stations of 4000 kw. capacity each.

The 3000-volt direct current system which will be



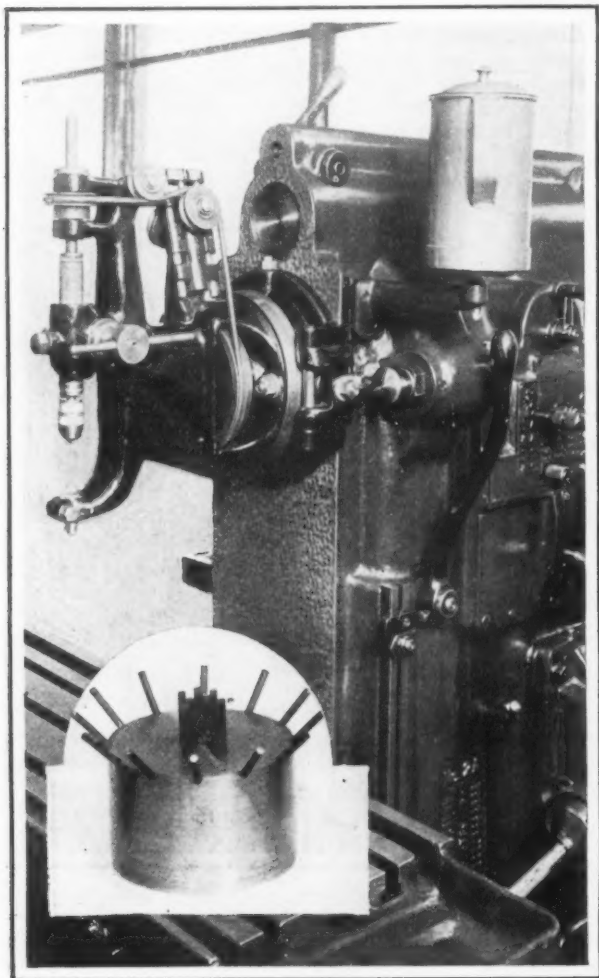
used will be strictly American in character. The capacity of this equipment will be 50 per cent greater than the present traffic demands, and the plans have been so drawn that an increase of traffic capacity three times the present demands can readily be obtained. Owing to the abundance of water power in Chile, and the high price of fuel, all of the Chilean railroads eventually will be electrified, and the present project is the first step in this direction. This contract is the third large order for electric railway supplies recently received by the Westinghouse Electric International Co. from foreign countries in the past few months, the others being obtained from France and Japan. Other American concerns who share in the contract are the Baldwin Locomotive Works, the Pressed Steel Car Co., and the Anaconda Copper Mining Co. The Errazuriz-Simpson Co. of Chile will build the overhead construction.

Fifteen corporations and thirty individuals were indicted by the Hamilton County grand jury, sitting at Cincinnati, on a charge of having violated the Valentine anti-trust law by conspiring in restraint of trade to maintain prices of cement. All of the corporations and the individuals are connected with the building trade industry and are users or sellers of cement. The grand jury also investigated the brick industry, but no indictment was returned.

Spotting and Routing Attachment

The spotting and routing attachment shown in the accompanying illustration, for use on milling machines, is being marketed by E. L. Krag & Co., 50 West Randolph Street, Chicago. It has been designed for the laying out and drilling of holes up to and including 3/16 in. diameter, in dies, jigs, templates, master plates and models.

The attachment is supplied for all standard makes of milling machines and is mounted by means of a swinging clamp using only one locking screw. A locating screw in the base is adjusted and locked in place and the attachment aligned permanently. A driving arbor, inserted in the milling machine, is constructed with a spring dog, engaging automatically when the machine is started. The spindle is driven by a round belt kept in uniform tension by a compensating spring



Spotting and Routing Attachment Mounted on Milling Machine. In the insert the center holes have only 0.002 in. wall between. In the outer holes the drill was started on the corner

idler. The ratio of speed is 7 to 1 with the spindle of the milling machine, and feeding by the sensitive spindle enables the use of a very small drill. The knee of the milling machine is locked firmly in place, eliminating any possible sag of the table. It is pointed out that the combination of the sensitive feed, the drill support immediately above the work and the table made rigid by locking the knee accomplishes a degree of accuracy unattainable if any one of the three conditions are lacking.

The spindle housing and the bracket holding the guide bushings are cast in one piece. By turning the spindle friction plug slightly to the right the spindle can be locked firmly in any position when using the attachment for routing. Guide bushings are of tool steel. After being hardened, the hole is lapped to size and then the bushing ground concentric with the hole. The spindle pulley and idler bearings, as well as the end thrust for the spindle, run on micro-chrome balls, all bearings being ground before hardening. The attachment has full circular movement and is graduated into

360 deg. and capable of instant adjustment to any angle. For scientific instruments and other work requiring similar accuracy, the attachment can be used in connection with the Johansson compound slide.

The device is manufactured by F. K. Krag, Chicago.

May Manufacture Equipment

WASHINGTON, Oct. 4.—Investigation has been ordered by Director of the Budget Charles G. Dawes, regarding the difficulty of retaining employees and using equipment that the Washington navy yard already has for the manufacture of metal office equipment such as desks and filing cabinets, for the use of the Government. One of the difficulties that has presented itself is as to whether or not the manufacture of such materials by the Government would be in violation of its contracts with private concerns. The investigation is being directed largely to this phase of the situation. In case it is found practical to produce the metal articles referred to, it is hoped that the work will enable the Government to keep employees who have been scheduled for dismissal in line with the policy of making reduction in forces, and at the same time use up surplus supplies now on hand, resulting in supposed economies for the Government.

Government officials also make the claim that metal furniture could be turned out at the navy yard at a lower cost than the Government can buy it in the open market, though the statement is seriously questioned, because there is not the proper equipment at the yard to do this work. Moreover, surplus sheets that may be on hand are not of the highly finished kind that are required to make office furniture, and apparently the latter would have to be bought from mills. Furniture for naval vessels, however, is made at the Norfolk yard, which is equipped for this kind of manufacture.

Imports of Iron and Steel

Up to the end of August, United States imports of iron and steel from Europe this year have aggregated 17,104 tons. More than 60 per cent of the total has been pig iron and semi-finished steel, with bars and sheets and plates making up the bulk of the remainder. Belgium alone sent nearly 60 per cent of the imports, with Sweden and the United Kingdom together accounting for an additional 33 per cent of the total.

Belgium has been the chief factor in supplying pig iron and billets, but other lines from Belgium have been relatively unimportant. Sweden has been strongest in imports of bars and wire rods, and the fact that Sweden stands next to Belgium in total tonnage has not generally been recognized by current reports regarding competition of European steel in domestic markets. British shipments of sheets and plates is another significant item, but most of the others are not of enough importance to deserve special comment.

Savage Mountain Clay to Last 100 Years

According to a recent survey by the Savage Mountain Fire Brick Co., Frostburg, Md., there is enough clay in the 8-ft. veins extending into Savage Mountain to supply the plant for the next 100 years. The fire clays of western Maryland were discovered in the 50's on the eastern slope of the mountain, lying in a pitch of from 30 to 35 deg. and in an inaccessible place. The company's operations were started in 1862, having been organized by the late Lovelace M. Gorsuch. In normal times the company employs in mines and yards over 200 men, including its allied works at Potomac, W. Va.

Work has been started on the taking down and rebuilding of the trestle work for the Port Arthur, Ont., blast furnace owned by the Palatine Mining & Development Co., which acquired the furnace of the Atikokan Iron Co., at Port Arthur some months ago. The construction work is being done by Hancock & Co., who are also rebuilding the bridges and culverts on the Pee Dee Railway between North Lake and Gunflint, to give access to the Polson mine.

Safety First—Last—And All the Time

Tenth Annual Congress of National Safety Council
Urges That No Stone Be Left Unturned to Insure
Continuous Freedom from Industrial Accidents

OFFICERS and the executive committee of the National Safety Council realize that one of the most effective ways of making the industrial worker a safe worker is to bring safety to him through the home. They realize that the child in the public or parochial school not only is the best means of driving home to the workman the lesson of safety, but that only through succeeding generations of children, thoroughly schooled in safety principles, can the nation hope to attain safe working and living conditions. The 1900 people attending the tenth annual congress of the council, held in the State House, Boston, Sept. 26 to 30, inclusive, were urged, upon returning home, to bring all possible pressure to bear on their local school committees or other bodies or individuals governing the schools to introduce courses of safety studies.

Resolutions were adopted by the executive committee advocating "the safety education of all school children, as well as students of our colleges and universities, both for their own safety and to stimulate interest in the conservation of life and a better citizenship, and the mobilization of all community forces, including city and state, at safety councils, for intensive and permanent campaigns against accidents of all types." The idea is to conduct hereafter aggressive and continuous campaigns of education through the school, the press and the various civic agencies, that the interest of the whole community shall be aroused, and safety be given a place in the community life.

Work accomplished by the national body, the local bodies and individuals during the past year, as exemplified in the numerous reports by officers and committees, and the evidences of substantial advancement in safeguarding human life, limb and usefulness, are more impressive than it might be under normal conditions, due to handicaps encountered. Largely because of industrial plants closing, there was a net loss of 425 in membership, leaving 3626 at the close of the fiscal year. In addition, the general business depression made necessary a material reduction in the number employed by the National Safety Council, as well as retrenchment in other directions. Work by the local and the individual also had its curtailment in one form or another.

It is interesting to note that most companies withdrawing from the national organization during the past year did so with the signified intention of renewing membership as soon as conditions warrant a resumption of business activities, and that the national organization, despite all handicaps, is operating at 90 per cent of capacity.

Massachusetts "No-Accident" Week

The keynote of the congress was the recognition of the work, and the thorough understanding of the scope of the national body's undertakings, by the press and the New England people. Several things usually in order at previous congresses of this kind were lacking. For instance, heretofore it has been the custom to have a safety week in those cities in which the congress is held. This time the Massachusetts Safety Council, with the help of other bodies, staged a State "no-accident" week. Other New England states were interested in the movement, and the co-operation of public and private institutions, industries, and of individuals and organizations was such that unquestionably it was the biggest no-accident demonstration ever attempted.

Standardization in analyzation of accidents, discussed annually, took an entirely new angle as a result of a paper, Analysis of Accident Cases—a scientific method based on the actual causes of accidents, regardless of the medium through which they occur, prepared by H. W. Lueck, Commonwealth Edison Co., Chicago, and presented by Homer E. Niesz of that company. In theory, the proposed method generally was considered fundamental, but the suggestion invited considerable discussion.

Mr. Lueck presented a basis for analyzing accidents as to cause, which materially differs from the analysis which for many years has been adopted, officially or unofficially, as standard. The purpose was to present a list which covers industrial accidents of all types, whether occurring in connection with the operation of a public utility, a steel mill, a mine, or some other branch of industry.

Standardized Analysis of Causes

"For many years there has been a demand for a means of supplying information to the one in charge of safety work, which will enable him to lay his hand on the causes of the accident, whether these causes be methods, conditions, equipment or personnel. Without

this information a safety supervisor must of necessity work in the dark. The aim of accident statistics has been to fulfill this need, but those charged with the responsibility of reducing accidents know only too well that the mark has been missed.

"For example, we find from the old analysis that nearly 20 per cent of all accidents occurring in the electrical industry are caused by 'handling material.' With this information, where is the safety supervisor to start in his efforts to eliminate this class of accidents? Perhaps some of these accidents are caused by men attempting to lift weights beyond their strength to move. If so, the primary cause of the accident is an attempt to do a class of work beyond the ability of the injured. Possibly some of these so-called handling material accidents are caused by needless haste, contributory negligence of others, lack of proper instruction or other causes. If so, this fundamental cause is the information which the safety engineer must have, in order effectively to combat accidents which, under the old system, would be buried under the general heading—handling materials.

"For some time, particularly during the past two years, much has been said concerning the need for standardizing accident statistics. Each branch of industry has a classification which differs from the other branches, and even within a particular industry there is a lack of uniformity which makes it extremely difficult, if possible at all, to combine statistics. Several committees are working on standardization. It is evident that the primary step to be taken is to adopt a classification which will be adaptable generally, and which will be of most value to the man directing accident prevention.

"Statistics obtained from an analysis of accidents which include any but primary causes are obviously misleading. Secondary or contributory causes should of course receive attention, but there is time for this when the much more important work of controlling the actual causes is well in hand. In the classification presented herewith are twenty-three causes of accidents, each primary in character. Any advantage gained from the use of classifications now in general use is



ARTHUR H. YOUNG

obtainable through the adoption of the one here submitted, and in addition there are here a number of new features of decided importance."

Reasons Why Accidents Occur

This classification is, to a certain extent, a tabulated analysis of reasons why the human element fails to function. This is obviously a point in its favor, if the statement so often heard and so seldom verified is true, that 85 per cent of industrial accidents can be attributed to carelessness. The twenty-three causes of accidents as given were:

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| <p>A—Lack of proper supervision:</p> <ol style="list-style-type: none"> 1. Altercation 2. Class of work beyond the ability of injured 3. Defective tools or devices 4. Improper tools or devices 5. Lack of proper instruction 6. Method pursued not suitable for work 7. Protective devices not used 8. Rules not observed 9. Safety appliances not provided 10. Defective material 11. Lack of proper inspection and maintenance | <p>B—Shortcomings of workman:</p> <ol style="list-style-type: none"> 12. Contributory negligence 13. Conceit 14. Intemperance 15. Lack of concentration 16. Mechanical manner of doing work 17. Needless haste 18. Physical condition of injured 19. Poor judgment 20. Stubbornness 21. Wilful carelessness <p>C—Miscellaneous:</p> <ol style="list-style-type: none"> 22. Elements 23. Non-industrial |
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It was contended that either the present or the new classification should be adopted, rather than both; that this classification offers for the first time an opportunity for standardization of causes, regardless of the industry involved. It was pointed out that certain modifications or amplifications can be made to adapt this classification to any particular industrial branch, and the different classifications were taken up in detail as to application.

One point was brought out vividly in the almost numberless discussions and papers on accident prevention. In previous years there was, due to business conditions, the question of whether industry had the right to make wearing of safeguards by workmen a condition of employment, resulting in a wide divergence of opinion. The consensus of opinion, as expressed at this congress, was that industry has that right, and innumerable instances were shown where important industries are exercising it. It also was definitely established that the day has passed when industrial management considers "safety first" a luxury. Instead, it has become a necessity.

Responsibility of the Foreman

The foreman, as usual, was the subject of much discussion, insofar as his relation to "safety first" instructions to workmen, and the carrying out of those instructions, are concerned. It repeatedly was stated, as many times before, that the safety engineer looks to the foreman as the best means of getting across the safety idea to the workman. But more emphasis was placed during this congress on the foreman's being held responsible for the safety of employees under him. The impression gained is that hereafter he will be more conspicuous in safety work.

Illustrations of the general attitude toward the foremen are found in the remarks of General E. L. Sweetser, commissioner of labor and industries, State of Massachusetts, who said: "If I could fix the responsibility of the accident on the foreman, or any other one in charge, instead of the one insured, I would do so," and in the remarks of J. F. Tinsley, general manager Crompton & Knowles Loom Works, Worcester, Mass., who said: "When we succeed in getting our foremen thoroughly imbued with a safety consciousness, we will have made a gigantic stride in solving the present phase of the industrial safety problem. Any lack of results to date must be attributed in a large measure to the fact that on safety our foremen are still 'at large.' We must see to it that they are put 'in captivity' as soon as possible."

Metal Section Discusses Foundries

The first session of the metal section was given over entirely to foundry problems. A. B. Root, Jr., mechanical engineer Hunt-Spiller Mfg. Corporation, Boston,

in a talk on Safe Practices in Pouring in a Foundry, confined himself to safety measures in his particular plant. In connection with safety appliances used in pouring, he displayed an apron which attracted considerable attention. It is used only by men pouring from large ladles, is made of asbestos, puts on over the head, and covers the man to below the knees, tying around the waist. Although stiff at first, it soon becomes pliable, and has materially reduced burn accidents. Mr. Root pointed out that the apron shown in the National Safety Council books covers a man only a distance of approximately 12 in. from his waistline.

Although the application of gas masks has materially increased, 95 diversified industries using them since the war, their development during the past two or three years has been along lines other than general design, as was revealed in an address by Capt. Guy H. Burrell, Mine Safety Appliance Co., Pittsburgh, accompanied by latest mask models. In the discussion, emphasis was laid on the various gas hazards encountered in by-product coke oven plants, and the seriousness of these from the humanitarian standpoint.

Previous to Capt. Burrell's talk, these same dangers frequently were referred to in a paper on The Hazards of a By-Product Coke Plant, prepared by F. F. Marquard, superintendent By-Products Plant, Clairton Works, Carnegie Steel Co., Clairton, Pa., the largest by-product plant in the country, and presumably one of the best equipped with safety appliances. The inference drawn from these two addresses is that the day is passing when men will give up their lives in performing hazardous duties in places where deadly gases are encountered.

Safe Practises in Rolling Mills

Many papers presented, on the best measures to be taken to safeguard workmen, were of a personal nature, dealing mostly with appliances used in individual plants or departments. The paper by Fred Johnson, superintendent of rolling mills, South Works, American Steel & Wire Co., Worcester, Mass., on Safe Practises in Rolling Mills, given before the metal section, is a case in point. The hazardous nature of work in a rolling mill is generally recognized, and results obtained in safeguarding lives in such mills are all the more significant because of this fact. Mr. Johnson went into detail concerning those measures taken in his particular plant, and the reasons for them.

He gave figures, compiled by years, from 1912 to date, treating with sixteen different kinds of accidents, from the most trivial to fatalities. In 1912 there were fifty-five accidents in his department; in 1913, thirty-eight; in 1914, twenty-three; in 1915, thirty-two; in 1916, fifty-one; in 1917, twenty-five; in 1918, eighteen; in 1919, five; in 1920, two; and so far this year but one. During those years when accidents were more numerous, 35 per cent of the total each year concerned hand and foot accidents, and the largest percentage of foot accidents resulted from unloading hot billets, falling from buggies as they came from the blooming mill. He said in substance that successful efforts were made in the steel industry to reduce accidents, long before the National Safety Council was organized.

"In years gone by, the success of rolling mill operations was gaged by tonnage produced and cheapness of production. When I was put in charge of our rolling mill, we, like our predecessors, had 'big tonnage' and 'low cost' absolutely in mind, as the main things we should strive for. And, like our predecessors, we strove for them. And, still like our predecessors, we attained them.

Tonnage and Cost Not Now First

"Of course, during all this striving for big tonnage and low cost, we kept hearing from our officials 'safety first', but it never once occurred to us that they actually meant it—not first, before tonnage and cost. I distinctly remember Judge Gary saying 'safety first' fifteen years ago. And so for several years we worked for safety first—after tonnage and cost. But the time came when some of us 'waked up' to the fact that this safety first talk meant safety first, not after production and cost, but first—ahead of everything.

"It was inconceivable to some of us who had come up from the bottom that our superiors meant it. Just how they convinced us that they meant it is of individual experience. There came a time when I realized that my success as an individual depended not first on record tonnage at low cost, but first on the freedom of my department from accidents.

"Let us say, then, the cornerstone of safe practises in rolling mills is a determination on the part of our executives to produce safety first—then produce steel; and the realization of everybody in the organization, particularly the workmen, that this is what is wanted and will be insisted upon.

"To-day things are different—so different that I sometimes give way to the feeling that we are getting to be mollicoddles, some of us play the game so safely. But the fact of the case is, we are preaching and getting across to our men the fact that they must not take chances. Now, if anything goes wrong, our men do not jump in as they would in battle, regardless of consequences, and sacrifice everything, rather than let the mill stop. And this is a big factor in eliminating accidents."

Automobile Accidents Stressed

The remarkable growth of the automobile industry during the past few years, and the injection of the motor truck into our national transportation problem, together with the large percentage of accidents and fatalities directly due to the automobile, necessarily occupied a conspicuous place in the deliberations and discussions. It was pointed out that in Massachusetts alone 60 per cent of travel is on highways, and 40 per cent of freight moved is done with motor truck. Conditions the country over are much the same. The importance of motor transportation, especially from the freight standpoint, is more likely to increase than to decrease. It therefore is necessary for all states to co-operate in the adoption of a uniform system to combat accidents, and of uniform truck weights and speed schedules, for there are not enough dollars in the United States to allow the automobile transportation problem to go on unrestricted.

In 1892 it cost Massachusetts \$2,800 per mile to construct good roads, ten years later it cost \$6,000, while to-day it is costing \$40,000. Various states already are nearing the taxable limit in road construction and safety first expenditures. The motor truck must not be kept off the road; it must be kept on the road. So dependent is industry on transportation, however, that unless we are able to work out wisely a solution to the highway problem, we shall find the United States handicapped in keeping people employed.

Officers for the Coming Year

Arthur H. Young, manager industrial relations International Harvester Co., was elected president for the ensuing year; to succeed Charles P. Tolman, chairman manufacturing committee National Lead Co., New York.

Among the twenty-four directors elected to serve three years are: C. B. Auel, Westinghouse Electric & Mfg. Co., Pittsburgh; C. H. Blakemore, Norfolk & Western Railway, Roanoke, Va.; Robert W. Campbell, Illinois Steel Co., Chicago; C. B. Connelley, Department of Labor and Industry, Harrisburg, Pa.; A. E. Davidson, Chesebro-Whitman Co., New York; Marcus A. Dow, New York Central Lines, New York; E. H. Fiesinger, Solvay Process Co., Syracuse; George T. Fonda, Bethlehem Steel Co., Bethlehem, Pa.; Robert Herdegan, Dominion Forge & Stamping Co., Ltd., Walkerville, Ont., Canada; Dexter F. Kimball, Cornell University, Ithaca, N. Y.; Harold A. Ley, Fred T. Ley & Co., Springfield, Mass.; R. M. Little, director of rehabilitation State of New York, New York; C. G. Rice, Pittsburgh Railways Co., Pittsburgh; L. A. Shondy, Bethlehem Steel Co., South Bethlehem, Pa., and R. J. Young, Illinois Steel Co., Chicago.

The following were elected directors to fill vacancies caused by death or resignations: George E. Morgan, Otis Elevator Co., New York, and Fred M. Wilcox,

Industrial Commission of Wisconsin, Madison, for the term ending 1922, and L. D. Burlingame, Brown & Sharpe Mfg. Co., Providence, R. I., for the term ending 1923.

Section Officers Elected

The metal section elected the following officers for the coming year: Chairman, J. R. Mulligan, Bethlehem Steel Co., Bethlehem, Pa.; vice-chairman, John A. Northwood, Cambria Steel Co., Johnstown, Pa.; secretary, Walter Harte, Jones & Laughlin Steel Co., Pittsburgh.

The construction section election resulted as follows: Chairman, F. A. Davidson, Dwight P. Robinson Co., New York; first vice-chairman, Frank S. Robinson, General Builders' Association, Detroit; second vice-chairman, W. F. Ames, McClintic-Marshall Co., Pittsburgh; secretary, J. H. Schultz, James Stewart & Co., Inc., New York.

Officers elected for the coming year by the automotive section were: Chairman, A. L. Kaems, Simmons Co., Kenosha, Wis.; vice-chairman, E. F. Blank, Buick Motor Co., Flint, Mich.; secretary, M. K. Averill, Dodge Brothers, Mishawaka, Ind.

A new section, the Drop Forge, was organized during the congress, of which E. C. Evans, Wyman-Gordon Co., Worcester, Mass., is chairman; C. A. Smith, Pittsburgh Knife & Forge Co., Pittsburgh, vice-chairman, and G. A. Kuechenmeister, Walkerville, Ont., Canada, secretary pro-tem. The election of the chairmen of the program, membership and bulletin committees was placed in the hands of the executives. It developed that the American Drop Forge Association was strongly in favor of a drop forge section.

Western Railroads Make Much Better Showing

August earnings of Western roads, just announced, were larger than had been generally expected, and are regarded as a sure indication of the steady revival in business conditions. The Chicago, Burlington & Quincy showed a net operating income of \$4,375,960 as against a deficit of \$4,566,998 in the same month of 1920. The net income for August, 1921, is the third largest in history, and not taking into account certain unusual adjustments which swelled the revenues of its largest month, stands second to August, 1918, when the net income was \$100,000 larger. The Atchison, Topeka & Santa Fe reports a net operating income of \$3,379,406 for August, 1921, as against a deficit of \$3,869,266 for August, 1920. Reports of the Chicago & Northwestern, the Chicago, Milwaukee & St. Paul, the Illinois Central and other lines, are of a similar character.

Not only are railroad earnings increasing but car loadings are steadily growing larger. According to a report by the Car Service Division of the American Railway Association, 853,762 freight cars were loaded during the week ended Sept. 17, or 105,644 more than during the first week of the month, when the observance of Labor Day caused a temporary decline in weekly totals.

The loadings of the week were also the largest since Dec. 4, 1920, but were still 137,404 cars short of the number loaded in the corresponding week of September, 1920.

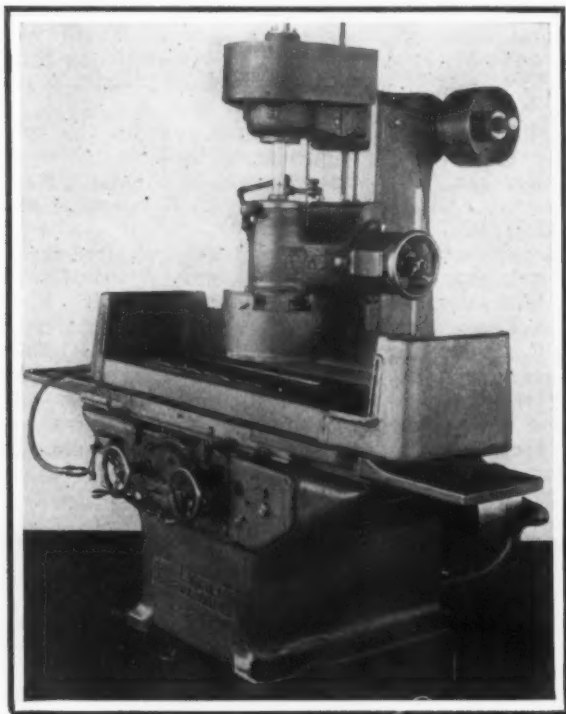
Absorbed by English Electric Co.

The plant and business of the Canadian Crocker-Wheeler Co., at St. Catharines, Ont., has been taken over by the English Electric Co. of Canada, Ltd., which was recently incorporated, by the parent organization, the English Electric Co., Ltd., London, England. Important developments are in prospect at the St. Catharines plant as a sequel to its purchase by the British firm. The new concern has secured a large order from the Hydro-Electric Commission, and another contract has been entered into with the Toronto Transportation Commission. The Canadian company will pay special attention to the manufacture of electrical equipment and rolling stock for railroads and tramways and of switch-gear and control apparatus of all kinds.

Improves Vertical Surface Grinder

New features have been incorporated in the 14-in. vertical surface grinding machine of the Pratt & Whitney Co., Hartford. The machine is of the movable platen type and is shown in the accompanying illustration.

The ball bearing mounting of the spindle has been redesigned, the weight of the unit being carried on springs set against the upper bearing. This is intended to provide an automatic take-up so that no adjustment for wear is necessary. Lubrication in the upper section is provided for, the oil dripping from



Hand Operation of the Table Has Been Simplified by a Sliding Gear in Place of a Clutch on the Hand Wheel Shaft

regulation oilers through the bearing and falling into whirling cups which throw it back into the bearing by centrifugal force. In the lower section the oil flows from the reservoir through the upper bearing and runs along the spindle to the lower bearing, the grinding wheel face plate acting as a retainer and ribs in this plate throwing the oil continually up into the bearing by centrifugal force.

An aperture in the column with a removable cover provides access to the spindle counterweight. The table drive has been strengthened by hardened shafts, gears and clutches, lubricated from sight feed oilers. The drive shaft unit is removable as split bearings are now used. Hand operation of the table has been simplified by providing a sliding gear in place of a clutch on the hand wheel shaft. The table reverse has a dwell in the pinion drive so that the table comes to a stop before reversal takes place, an arrangement said to eliminate jumping and protect the clutch mechanism. The feed shaft has been fitted with a keyed coupling for easy removal of the main drive unit. The main drive belt idlers are now equipped with roller bearings lubricated by grease cups.

The tank has been redesigned. A series of baffle plates cast integral with the tank are provided with openings alternately at top and bottom. The solution flows over and under these plates in a manner intended to provide clean solution, free from grit, to the last compartment from which it is pumped back to the work. The settling pan can be lifted off giving accessibility to all compartments. To add to the oil retaining capacity of the main drive cone at the rear, the hollow stationary shaft, keyed to the bracket is provided with grooves packed with felt, the grooves being connected to the center oil hole.

The motor drive is provided with an adjustable

base to permit correct adjustment of the drive belt to the step of the main drive cone. This is said to prevent creeping and curling in the corner. The drive for the rotary tilting chuck, plain and magnetic, is now equipped with a flexible coupling to facilitate mounting the unit and aligning the drive shaft. The demagnetizing switch has been improved to make the current reversal positive, quick and smooth.

New Bench Hand Milling Machine

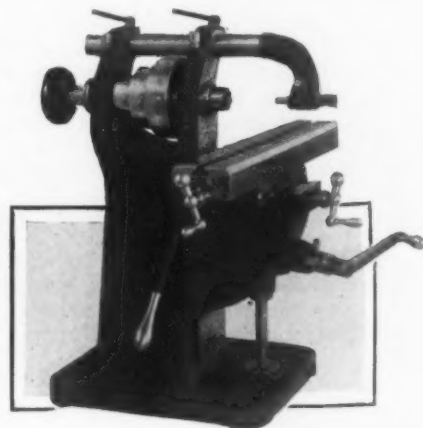
The Pratt & Whitney Co., Hartford, has recently brought out the new bench hand milling machine shown in the accompanying illustration. It is designated as the No. 3.

The regular equipment includes the overhanging arm, drawback, set of wrenches and 2-speed wall countershaft. The bench space occupied is 25 x 22 in., the height 21 in. and the weight 185 lb. net. The spindle and drawback are the same as in the company's No. 3 bench lathe and all bench lathe spindle attachments will interchange. The table will accommodate attachments conveniently and accurately, and in addition, is adapted for the No. 3 bench lathe head and tailstock.

The table working surface, sides 30 deg. angle, is $17\frac{1}{2} \times 2\frac{3}{4}$ in. The maximum longitudinal travel of the table is $8\frac{1}{4}$ in., with screw and 4 in. with rack. The maximum and minimum distances from center of the table to the end of the spindle are $2\frac{1}{8}$ in. and $15/32$ in. respectively. The table transverse adjustment with screw is $27/16$ in. The minimum distance from table top to center of spindle with overhanging arm in down position, is $7/16$ in. The maximum vertical adjustment of the table from center of the spindle is $6\frac{1}{2}$ in. with screw, no vise and $43/16$ in. with screw, with vise. The width of the table slot is 0.45 in.

Micrometer dials are graduated in thousandths on all screws. The spindle is of tool steel, hardened and ground, and is made conical at the front end. The front bearing is double taper and of tool steel, hardened and ground, the rear bearing being of non-gran bronze. Both bearings are adjustable for wear. The hole through chuck seat is 0.650 in. Spindle speeds are given as 153 to 1510 r.p.m. and the cone steps as $2\frac{1}{2}$.

The Spindle and Drawback Are the Same as in the Company's No. 3 Bench Lathe, and All Bench Lathe Spindle Attachments Will Interchange. In addition, the No. 3 bench lathe head and tailstock may be used



$3\frac{1}{2}$, $4\frac{1}{2}$ in. in diameter. Countershaft speeds are 128 and 512 r.p.m.

Additional equipment is furnished upon order, including a vertical milling attachment which is mounted over the spindle nose, a plug draw-in collet supplying the drive. The overhanging arm is reversed and the attachment clamped to it, an arrangement making for stability.

The American Society of Lubrication Engineers will hold its first annual convention in Chicago on Oct. 13 and 14. The society was established to promote a better understanding of the problems of lubrication and the use of liquid fuel. The convention will be open not only to members of the society, but to all interested. J. L. Overholt, Monadnock Block, Chicago, is the secretary.

Effect of Exchange on Machinery Exports

Practical Man Presents Interesting Phases of Present Conditions, Showing Fallacy of Claim That a Depreciated Currency Is Desirable

WASHINGTON, Oct. 4.—Recent press comment seems to betray a great deal of confused thinking on the subject of the influence of European exchange rates on our foreign trade. Great stress has been laid on compensation paid German labor, and little or nothing is heard of the effect of exchange on the other items entering into the total cost of production in countries having depreciated currencies. A keen observer, who has had practical experience in the machinery business, considers a hypothetical case and discusses the situation as follows:

"Let it be assumed that in 1913 Argentina purchased a locomotive at about \$35,000 United States currency, having received tenders for it from German and American manufacturers and that both bids were substantially equal. Also assume that of the elements entering the cost of this locomotive, the raw materials, labor and overhead were equal so that if transportation, etc., cost \$5,000, the items in the cost of the above engine would represent: Labor, \$10,000; raw materials, \$10,000; overhead, \$10,000.

"Now if Argentina were to enter the market again in the near future for a locomotive of somewhat smaller size so as to have the same delivered cost in the present market, the situation as applied to the proposed American unit would probably be somewhat as before, but the costs applying to the German equipment would be profoundly changed.

Pay of German Machinists

"German machinists in 1920 were receiving about 264 marks per week as compared with the 24 marks they received in 1913. Other labor is paid from 10 to 20 times the pre-war rates. But as the mark has depreciated to, say, 5 per cent of its former value, German labor is receiving far less than the old rates. On the other hand, it is obvious that the standards of living of German labor cannot be greatly reduced for a considerable period, and as so much of the German food supply is imported, it appears that the above condition cannot continue very long.

"The situation with regard to raw materials is less disconcerting. If they can be produced in Germany, the cost would probably compare with that of labor, for to a great extent the cost of raw materials is the cost of the labor needed to produce them, and, although the German prices as expressed in marks are very high when compared with prices in the world's markets, these prices are still low. But for raw materials as well as labor, there is a strong tendency for the German price to rise to the level of the world's markets.

"In those cases where the raw materials are not produced in Germany, it is obvious that the German manufacturer would need to pay the full price for them in the world's markets and, apart from fluctuations, exchange would not influence the transaction.

Most Profound Influence

"But it is in connection with overhead that the most profound influence is felt. A bond for 10,000 marks issued in 1910 can still be redeemed for 10,000 of the present day marks, unless it was one of the issues specifying gold or had some similar restriction. Other forms of invested capital are in a like predicament.

"If the Hamburg-American line paid a 10 per cent dividend in 1913 and again in 1921, the real value of the latter dividend was probably about 5 per cent of that of the former year or only a negligible return upon the gold value of the original investment. Even in the case where some German firm to-day pays a 100 per cent dividend, it only corresponds to about a 5 per cent return on the gold value of the stock at its former par.

"For these reasons, it is clear that present quota-

tions made on German made machinery in the various competitive overseas markets represent a great deal of uncertainty as to the overhead charges included.

"It may be inferred that in most cases the overhead charges are not in line with those necessary in other countries. This situation is also only temporary. German capitalists are suffering seriously and will make every effort to regain the old position, but this can only happen when specie payments are resumed, and this required 15 years in the United States after the civil war.

"For the purposes of this article the new cost of the smaller German locomotive mentioned above can be assumed to be somewhat as follows: Labor, say, \$7,500; raw material, say, \$7,500; overhead, say, \$500; transportation, say, \$5,000; total, \$20,500.

Taxes in Germany

"It is possible that something like this has happened, but even at that the analysis is far from complete. Taxes in Germany are now very heavy and must be further increased. Also, there is the 26 per cent export tax under the reparations agreement. There are other items too numerous to consider here.

"Generally speaking, in international trade the exchange rate is not so serious a matter. After a time relative values are established and business can be conducted on almost any basis so long as it is stable. But when exchange fluctuates, business suffers. It becomes too much of a speculation and conservative managers find it necessary to allow a margin in their estimates so that they will be protected. During recent months, American exporters have had a great advantage over their British competitors in their trade with Japan, because the London rate has been fluctuating widely while the New York rate has been relatively steady. While, at first, this may seem a small matter, it has real importance and German bidders in South American and Asiatic markets now frequently submit their bids in United States or British currency.

Fallacious Reasoning

"It has sometimes been suggested that it is an advantage to have a depreciated currency, and that Great Britain has deliberately accomplished this in order to have an advantage in international trade. The fallacy of this reasoning may be suspected from the keen spirit all Europeans manifest in their efforts to re-establish their former exchange rates. Also, Italy has recently taken official notice of the superior position of the United States dollar among the currencies of the world. Following the American civil war this country did not enjoy real prosperity until specie payments were resumed in 1879. Those who lived through those years of reconstruction can give personal testimony to the hardships inflicted by 'greenbacks.'

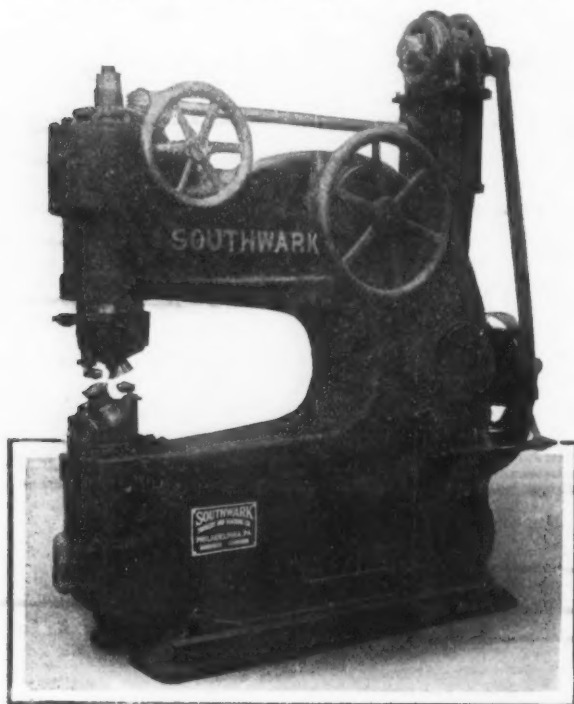
"In appraising the effects of exchange on Germany's foreign trade, it is very important to consider the amount of the overhead burden included in the ultimate costs. While it is well known that German labor is inadequately paid, it is obvious that most of the gain acquired through exchange, as shown in German quotations abroad, is at the expense of capital invested in Germany and so soon as this fact is realized by those capitalists, it probably will be discontinued.

"It has been said that 90 per cent of the cost of a steel ship, considering everything from the ore mine to completion, is labor, so that German quotations abroad for new vessels will probably be controlled very largely by the labor item. At the other extreme, the overhead is the controlling item in the cost of producing dyes, and the effect of present exchange rates should be profound. As for machinery, each class may be considered correspondingly."

New Sizes of Turret Rotary Shears

Three new sizes of the Southwark-Gray turret rotary shear have been added to the line of the Southwark Foundry & Machine Co., Philadelphia. They are designated Nos. 0, 2 and 3, for material 16 gage, 8 gage and $\frac{1}{2}$ in., respectively.

The underlying principle of this design was outlined in a description of the No. 1 shear, appearing in the May 27, 1920, issue of THE IRON AGE, page 1527. Stated briefly, the cutters while working can be changed to any degree of a circle enabling the machine to shear various shapes without turning the sheet or plate dur-



The Cutters Automatically Feed the Stock Through the Shear. Both cutters are power driven

ing the cut. Furthermore, the shear cuts any shaped openings up to double the throat depth at any distance from the end of sheets or plates, regardless of length. Cuts as wide as the throat depth are made in one continuous operation, greater widths up to double the throat depth being cut by first shearing in as far as possible from one edge and then giving the material a half turn or turning it over and the balance of the cut made from the opposite edge.

The line to be cut is followed by means of the turret, which is revolved by the guide wheel, the course of the cutters being changed to follow the line in the same way that the course of an automobile is changed by means of the steering wheel. When the position of the cutters is changed the direction of the feed is correspondingly changed. The cutters automatically feed the stock through the shear, although the material may be guided through by hand if desired. In the larger sizes both cutters are power driven.

The machine shown in the accompanying illustration is the No. 3, the throat depth of which is 36 in., the cutters 4 in. in diameter, and the cutting speed 10 ft. per min. The height is 6 ft. 6 in., the length 7 ft. 3 in., and the width 3 ft.

Fighting for the Open Shop

The strike called against the Wheeling Steel Corporation appears to be petering out. The company has succeeded in reopening its Portsmouth, Ohio, works and has enough orders and a sufficient force of men to keep the plant going. It is believed by the officials of the corporation that when enough orders have been accumulated to warrant a resumption at their Wheeling and Yorkville, Ohio, works, they will not have much trouble in getting together a sufficient working organization. The company shows no indication of abandoning its fight for the establishment of the open shop principle in its various plants, and unlike other previous efforts in this direction, public sentiment largely is

with the company this time. Building trades unions appear to have lost the fight in this city to maintain the closed shop and a good deal of new construction is in progress which is entirely on an open shop basis.

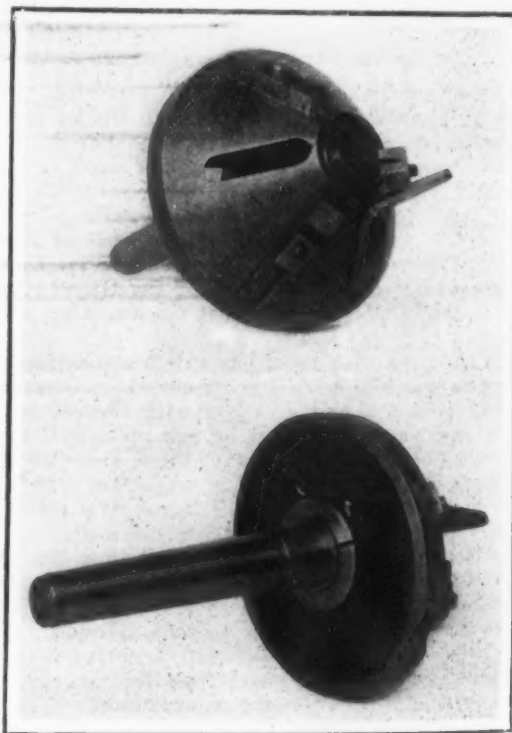
Business sentiment is much more cheerful than it was even as recently as three or four weeks ago, and while nobody expects a sudden revival, the belief is general that the worst has been seen and that there will be a steady, gradual upturn in orders during the remainder of the year.

Universal Piston Grinding Attachment

A universal piston grinding attachment, known as style No. 509, has been brought out by the Norton Co., Worcester. It is furnished only with the company's autopart regrinding machine, with which it will be included as part of the regular equipment.

The attachment can be used on pistons from $2\frac{3}{4}$ to $7\frac{1}{2}$ in. in diameter. As shown in the accompanying illustration, the fixture consists of a dead center upon which revolves a cast iron cone having three dove-tail slots. In each slot there is mounted a hardened tool steel, slidable member, the upper surface of which is ground conically. This upper surface is parallel to the bottom of the slot so that the movement of the jaw is along an element of the cone. The jaws have a transverse groove to permit the corner of the wheel to travel beyond the piston. The jaws are also slotted longitudinally and locked in place by a taper pointed screw.

The surfaces upon which the piston rests being elements of a cone, an accurate setting of the jaws is unnecessary, being merely set by the eye to bring the clearance groove into proper position. The cast iron cone revolves upon the end of a dead center on a conical bearing, and is driven by the regular drive pin ex-



Universal Piston Grinding Fixture for Use with Auto part Regrinding Machine. It will take pistons $2\frac{3}{4}$ to $7\frac{1}{2}$ in. in diameter

tending from the face plate of the machine into the cored slot shown. The piston is driven by a spline made of a small piece of sheet steel screwed to the side of one of the jaws. A shallow slot is filed in the skirt of the piston to engage this spline. For cases where slotting the skirt is not desired, a special driver is furnished.

The bearing of the cast iron cone on the end of the dead center is tapered, wear being taken up by turning a split adjustable thread collar immediately in back of the cast iron piece. Oiling facilities are provided by means of drilled holes leading from the back of the center to the inside of the bearing.

Meeting of the American Engineering Council

Dean Cooley Elected President—Action Taken on Patent and Government Contract Matters and Engineering Employment Service

THE election of Mortimer Elwyn Cooley, dean of the College of Engineering and Architecture of the University of Michigan, as president of the American Engineering Council of the Federated American Engineering Societies was announced at a meeting of the executive board of the council held at the Cosmos Club in Washington on Sept. 30. Dean Cooley assumes office at once and will carry out an extensive program in the interest of the public and the profession of engineering.

The new head of organized engineering is a past president of the American Society of Mechanical Engineers and has a long record of distinguished service in education, under the government and in private capacities. He was born in Canandaigua, N. Y., March 28, 1855, and was graduated from the United States Naval Academy in 1878. Mr. Cooley was vice-president of the American association for the Advancement of Science in 1898; director of the American Society of Civil Engineers, 1913 to 1916; vice-president of the Society for the Promotion of Engineering Education, 1908-09, and president of the Michigan Engineering Society in 1903.

Resolutions on Patent Matters

The council adopted the report of the committee on patents, headed by Edwin J. Prindle, New York, urging the passage of the Lampert bill to remedy conditions in the Patent Office, which, the committee asserted, were menacing the nation's industrial and agricultural welfare. A resolution approved by the council expressed the conviction that the Lampert patent office bill "provides the least increases in force and salaries which can possibly stop the retrogression of the Patent Office and enable it to make progress toward recovering an efficient condition, and by increases in the fees for patents, supplies the funds necessary to enable the Patent Office to continue to be self-supporting."

The committee opposed the passage of the Stanley Senate bill which provides for an amendment to the Patent act, requiring that patents to aliens be granted with a condition that unless such patents be worked in this country within two years after the granting of the patents, the government may grant licenses under them.

Employment in Engineering

The executive board engaged in a long discussion of the report of the special committee on employment, finally appointing a committee of the board to draft resolutions which would crystallize the general thought brought out by the discussion. The committee reported the following resolutions which were adopted:

"Whereas, the need is pressing for a unified employment service for engineers, national in scope, local in application, and financed for adequate service, and

"Whereas, the contributions which the constituent societies of the Federated American Engineering Societies are able to make to the employment bureau have been found inadequate to provide an employment service such as engineers require, therefore, be it

"Resolved: That the executive board of the American Engineering Council endorses in principle a paid employment service but in the reduced fees to members of organizations supporting said service, and be it further

"Resolved: That a committee of five members of the executive board be appointed by the chairman and that the boards of direction of the four founder societies be requested each to appoint a member of its board in order to form a joint committee of the nine members on engineering employment with the power to organize an employment bureau on a plan which will invite the co-operation of interested organizations."

The question of government contracts was discussed by the board, which made recommendations, among them the following:

Basis of Government Contracts

"That government work be normally carried out through unit price, or lump sum contracts, or by the purchase and hire method; where none of the above methods are applicable to conditions, that the cost-plus method be used in which the contractor is refunded the actual cost of the work, plus an accorded compensation which increases if the work is done below the estimated cost of the work, and decreases if the work costs more than estimated, but never sinks below zero;

"That there be appointed by the President an inter-departmental board on standardization of contracts, consisting of one representative of each government department engaged in construction. That this board recommend policies to govern in the standardization of contracts within each department. Each department should have a small board representative of each bureau engaged in construction, and should seek to unify and standardize contract practices within the department, and the chairman of these departmental boards might preferably constitute the inter-departmental board, which should be only advisory in character. That when the contracts of each department shall have been by itself thus standardized, that the inter-departmental board consider these contracts and make necessary recommendations to harmonize and secure, so far as feasible, uniformity of practice in the different departments;

"That all government officials shall recognize the importance of exerting the utmost efforts to make prompt partial payments on government contracts at reasonable intervals as stated in the contracts, for all services rendered and materials delivered by the contractor, on the work that has been accepted by the government inspector;

"That payment shall in all cases, as far as possible, be made by the official or agency directing the work, and not by an outside accounting or financial agency, in order to avoid the burden on the contractor of delays in payments when made by such agency not directly concerned with, or responsible for the efficiency, economy and dispatch of the work."

No Engineering Assembly in January

In view of the business depression, it was decided not to hold an engineering assembly next January. The committee in charge of the arrangements was converted into a program and entertainment committee for the annual meeting of the council to be held in Washington in January.

The executive secretary was authorized after advice with the committee on procedure to organize in such states as may seem necessary a State administrative committee. The purpose of such committee is to have a direct medium whereby the federation may obtain prompt action in relation to any of its activities.

The board announced the resignation as assistant secretary of A. C. Oliphant, who is to become associated with M. O. Leighton & Co., consulting engineers of Washington.

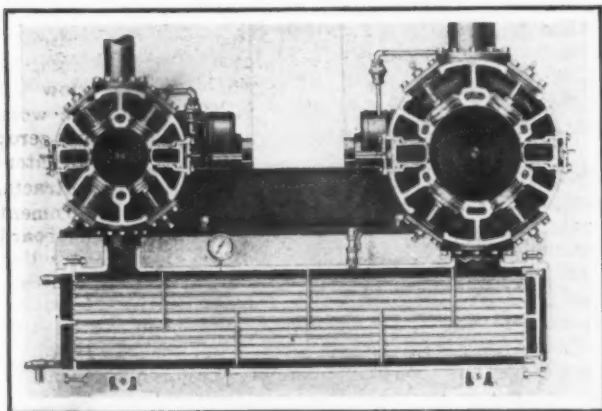
The board received the report of Col. A. S. Dwight, the federation's representative on the deputation of thirteen which went abroad to confer the John Fritz Medal on Sir Robert Hadfield and Dr. Eugene Schneider. British engineers, he reported, manifested an active interest in the federation. Steps have already been taken to organize the engineers of the British Empire along the lines pursued by the Federated American Engineering Societies.

The application for membership of the Vermont Engineers' Society and the Associated Engineers of Spokane were approved.

New Line of Air Compressors

The Ingersoll-Rand Co., 11 Broadway, New York, is offering a new line of belt driven air compressors known as the Imperial type XCB. The company's plate valves, for both the air intake and discharge, and the 5-step clearance control for regulating the compressor's output have been incorporated in the new machines.

In the plate valves used the valve is supported throughout its operation in proper alignment without any form of wearing guide, which, it is emphasized is a very essential feature in the life of the valve. The clearance control is the same used on the company's larger direct-connected electric motor driven compressors,



Section Through Cylinders and Intercooler Showing Clearance Valves and Pockets

sors, and is intended to secure efficient operation at partial loads. The compressor is automatically loaded or unloaded in five successive steps, which are obtained by the reduction or addition of clearance space to the air cylinders. The compressor will operate at full, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$ and no loads. The design of the clearance control is said to be such as to secure efficient operation at any one step, the reduction in input power required being practically in proportion to the reduction in output capacity.

The clearance pockets are made integral parts of the compressor cylinder and the regulation is obtained by control of the volume of air taken in and compressed. It is claimed that this method of control eliminates loss of power due to wastage of air and leakage. The clearance pockets in the cylinder are automatically thrown in communication with the ends of each cylinder in proper succession, the process being governed by a predetermined variation in receiver pressure. With the compressor operating at partial capacity a portion of the air is compressed into an added clearance space instead of passing through the discharge valves. On the return stroke this air expands giving up its stored energy to the pistons. The inlet valves remain closed until the cylinder pressure equals the intake pressure, at which point they are opened automatically and free air taken into the cylinder for the remainder of the return stroke. Thus, it is pointed out, the inlet capacity is reduced without reducing the intake pressure. On a two-stage compressor clearance space in proper proportion is added simultaneously for both high and low cylinders.

The mechanism for regulating the compressor is independent of the running gear. In the loading and unloading, the difference between any two steps is small enough to prevent undue electric current fluctuation.

The new line of belt driven compressors equipped with clearance control, can be furnished single-stage for low pressures and two-stage for higher discharge pressure. The piston displacement capacity for 100 lb. discharge pressure ranges from 610 to 1505 cu. ft. of free air per minute. Short belt drive attachment with floating idler can be furnished.

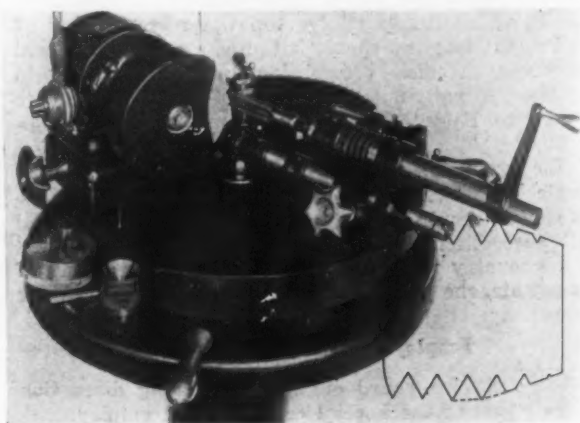
The Union Hardware Co., Torrington, Conn., has gone on full time, fifty-five hours per week.

New Tap Grinding Machine

A tap grinder designed to sharpen taps of any style and having any number of lands or flutes from 2 to 6 inclusive, has been developed recently by the Bickford-Switzer Co., Greenfield, Mass. The sharpening is done by grinding an eccentric relief on top of the cutting land and the limit of capacity is $1\frac{1}{2}$ in. diameter for hand taps, $1\frac{1}{4}$ in. for tapper or machine-nut taps and 2 in. for pipe taps. Countersinks and chucking reamers of not more than 6 flutes can also be sharpened.

The machine grinds the different lands of the tap consecutively, a cam on the main or work-carrying spindle riding against a positive shoe and thus causing the tap to approach and recede from the wheel as it is revolved on its own centers. The squared end of the tap is driven by a bell center, the point end being supported by a male or female center as required. The two centers are made on a revolving plate which remains out of the way to give space for inserting the shank of a long tap that is required to be held in the chuck. The different cams are made together in a single shell and mounted on the work spindle in a manner that when the spindle is turned in the backward direction the cams do not revolve, but will start forward from any position when the spindle is turned forward. This arrangement assists in setting the tap to bring the proper relative position between its cutting land and the cam, which is accomplished by turning the tap backward until the contact point of the wheel is in a position between two tap lands and then turning the tap forward.

The head carrying the main spindle is arranged to clamp in the desired position on the rocker shaft, a flat spring underneath holding the head over to keep the particular cam in use in contact with its shoe. A small cam shaped collar forces a shoe into contact with the cam it is desired to use. A lever at the left feeds the work forward to a position opposite the wheel, a lever at the right setting it to the desired angle. The



The Lands of the Tap Are Ground Consecutively. A cam on the work-carrying spindle causes the tap to approach and recede from the wheel

wheel is fed in as the work is revolved by the crank. A feature of the machine is the provision for changing the angle of the work as it passes the wheel, giving a rounded contour where the angle of the bevel near the end of the tap approaches the parallel sides. This is intended to prolong the life of the tap, taking off the point of the tooth that projects on one land as when the tap is sharpened by ordinary methods. It is also of value when sharpening chucking reamers as it eliminates the use of a hone to take off the sharp corner. The machine as shown in the accompanying illustration is self contained and equipped with a $\frac{1}{4}$ hp. motor. It is mounted on a column and weighs 300 lbs.

Hurwitz Brothers Iron & Metal Co., Syracuse, has purchased a tract of five acres in South Buffalo, on Marilla Street, and is establishing a branch modern scrap iron and metal yard with trackage accommodation for 40 cars. The company is in position to handle large tonnages of railroad material and now has on hand about 3000 tons.

American Electrochemical Society

Discusses Non-Ferrous Metallurgy, Electric Melting Furnaces, Corrosion and Other Subjects at Annual Fall Meeting

THE board of directors of the American Electrochemical Society, in departing somewhat from usual custom in selecting the Lake Placid Club, N. Y., for its annual fall meeting, Sept. 29, 30 and Oct. 1, made no mistake, for the attendance was larger than expected by the most optimistic. Over 110 were registered and the meeting was a success both from the technical standpoint and from that of recreations, which are always a feature of this society's meetings. It was also the fortieth general meeting, marking a milestone in the society's history.

Symposium on Non-Ferrous Metallurgy

A symposium on non-ferrous metallurgy was the feature of the technical program. This was held on Friday morning, Sept. 30, with Acheson Smith, president Acheson Graphite Co., Niagara Falls, N. Y., and president of the society, in the chair. Ten papers were scheduled and presented.

Electric Melting Furnaces

Two papers dealt with electric furnaces for melting brass and other non-ferrous alloys. H. M. St. John, Detroit Electric Furnace Co., Detroit, delivered the first one, entitled: "The Influence of the Electric Furnace on the Metallurgy of Non-Ferrous Metals." The author described the successful electric furnace, as used in brass foundries, rolling mills, and refining plants, as a machine for melting metal, operated by a mechanic who follows definite instructions, and declared, in summarizing, that the electric furnace in the brass melting industry has shown the following tendencies in its influence upon that industry:

A gradual breaking down of the secretiveness as to methods and results which has characterized this industry in marked degree.

The replacement of the experienced brass melter by a mechanic who may know next to nothing about brass but who can operate the electric furnace in accordance with instructions—just as he might operate any other semi-automatic machine.

The melting of high-quality brass and bronze in ton lots, or approximately ten times the amount of the average crucible heat.

The more convenient and economical handling of charges consisting wholly, or in large part, of new metals.

A more complete utilization by the foundry itself of chips, borings, grindings, concentrates and metal-bearing wastes.

A more complete recovery by the smelter and refiner of the metal contained in concentrates and foundry wastes purchased by him. Also a more efficient salvaging of junk metals.

Inclusion of zinc and the other white metals directly in the charge originally placed in the furnace, thus eliminating the laborious and expensive speltering process.

The introduction of mechanical charging methods, at a great saving of time and labor.

The elimination of fuel storage and handling, as well as the necessity of disposing of ashes and combustion gases. Brass foundries can now be built without stacks, while some who already have them are pulling them down.

Rapid progress in the determination of factors upon which successful brass melting depends, and which have previously been undetermined because of the inexact nature of the process.

Progress in the development of refractory and other materials needed by the electric furnace in order to produce the most favorable results of which it is capable.

The elimination of oxygen, sulphur and other contaminating elements, from the atmosphere to which the molten metal is exposed.

The melting of copper alloys at an average net loss of less than 1 per cent, as compared with the 2 to 3 per cent which was formerly considered good practice.

A reduction in the amount of hand labor necessary and

an improvement in working conditions due to the more nearly automatic operation of electric furnaces.

A more exact temperature control which permits of nearly perfect duplication of results.

Rapid progress in the application of direct pouring from the furnace into molds.

The production of a better average quality of metal than was formerly possible, even in the crucible.

A marked reduction in the overall cost of melting copper alloys, as compared with fuel-fired furnaces.

The rapid disappearance of the crucible from rolling mill work, and a somewhat more gradual reduction in its use elsewhere.

The gradual restriction of open-flame furnaces to a relatively narrow field of use.

In response to questions as to costs, Mr. St. John replied that he estimated the electric melting cost, when plant operations are normal, as one-half that of crucible melting and two-thirds that of gas or oil.

Dr. Horace W. Gillett, Bureau of Mines, Ithaca, N. Y., made the interesting statement that in his very recent canvass of the situation as to what companies had by this time installed electric melting furnaces which had been contracted for, as announced last spring in his paper at Atlantic City, every company operating a rolling mill had already installed the expected furnaces and were ready to operate—a fact which he thought bore out the author's statement that the crucible was rapidly disappearing from rolling mills as a melting medium.

Dr. J. W. Richards, secretary of the society, Lehigh University, Bethlehem, Pa., stated that papers on this subject were being eagerly sought and read in Great Britain, and some were already translated into foreign languages.

The other paper on electric melting was by T. F. Baily, Electric Furnace Co., Alliance, Ohio, entitled "Resistance Type Electric Furnace in the Melting of Brass and Other Non-Ferrous Metals." The author presented a brief abstract. In considering an electric furnace for such a purpose, he outlined 11 various features to be considered, such as: Quality of metal; simplicity of construction; current consumption; electrical load factor; power factor; labor for controlling the furnace; adaptability to various alloys; adaptability for melting various raw materials; renewals, repairs and upkeep; total cost per ton. His summary was as follows:

In summarizing the various advantages and disadvantages of the resistance type furnace as compared with other types, it is to be noted that, based on current consumption alone per ton of metal melted, the resistance type furnace does actually take more kilowatt hours per ton than any other type; but it is also to be noted that it earns, in most cases, as compared with other types, a better power rate, and that if the cost of electricity per ton of metal is at the usual rate which obtains from central stations for such service, then the actual cost per ton of metal melted for electricity is, in some cases, less when the resistance type furnace is used than when the arc type furnace is used; then, when taking into consideration rates where a penalty is made by the central station due to low power factor, the advantage of the induction type furnace as to lower current consumption per ton of metal melted is, to some extent, offset. Then, the labor for controlling the resistance type furnace is materially less than the arc type; and, due to its larger capacity per unit, is also lower in cost of furnace operation than the induction type. Again, as to the labor required for handling the furnace, the larger capacity of the resistance type furnace, as compared with the induction furnace, is an advantage; and, due to its simplicity of operation, the resistance type furnace requires a smaller crew to handle than is the case with the arc type furnace. Then, due to its ability to handle various mixtures, it has a distinct advantage over the induction type furnace, which must be built distinctly for one mixture, and cannot, from an electrical standpoint, be used for any other metal, without replacing the entire bottom of the furnace. As

compared with the arc type furnace, the hearth arrangement is such as to make it possible to build a much more substantial hearth lining than in furnaces of the arc type; and the same simplicity of construction gives a similar advantage with reference to the melting of various classes of raw material of any analysis.

So that, when taking into consideration the total cost per ton of merchantable castings or bars produced, and adaptability over a wide range of alloys, such as must be met with in any mill or foundry, the resistance type furnace comes more nearly filling all the requirements than any other type of electric furnace for melting now made.

Some sharp exceptions were taken to Mr. Baily's claims by makers of arc and other type furnaces. Mr. St. John declared that some of the advantages claimed are common to all types and Dr. Gillett pointed out that the arc and induction types were quite common to rolling mills, whereas the resistance type was more general in foundries. In response to question by Dr. Colin G. Fink as to the highest temperatures attained in resistance furnaces, Mr. Baily stated as high as 3300 deg. Fahr. had been attained in a Baily furnace melting 0.05 per cent carbon steel experimentally for three weeks or so.

Electricity and Fuel Heat Compared

A paper on the "Comparison of Electric Furnace Practice with That of Fuel Fired Furnace Practice," by N. K. B. Patek, works manager Lumen Bearing Co., Buffalo, N. Y., was presented in abstract by E. L. Crosby, Detroit Electric Furnace Co. In such a comparison, according to the author, the important considerations are cost of electrical energy and fuel, and efficiency of operation. His experiences are that the cost of the metal melted, the melting losses and the solution of gases in metal are substantially the same in the electric and in the fuel-fired furnace, providing intelligent operation is pursued. The claims of the electric furnace makers for marked savings in melting loss are somewhat exaggerated, though it is true certain types of alloys may be melted in an electric furnace with a reduction in this loss as against melting the same alloy in efficiently operated fuel-fired furnaces.

Mr. Crosby pointed out that the author's plant did not operate under standard manufacturing conditions, as the Baily furnace in use melts a high zinc alloy and the Detroit rocking furnace works under high temperature conditions, so that the conclusions do not represent the industry as a whole. C. B. Gibson, Westinghouse Electric & Mfg. Co., Pittsburgh, stated that the experience of his company in the use of electric melting has been that the cost was one-half that of natural gas when operating conditions were normal.

Mr. Crosby stressed the recommendation that the society in the future seek to obtain papers on this subject from users of electric furnaces and not sellers, and thus eliminate as far as possible all advertising features. This was heartily seconded by several, though there were some who spoke in favor of the experience of both sides being made public.

Melting Silver Electrically

"Electric Melting of Silver," by H. A. De Fries, consulting engineer, New York, was presented in abstract by Dr. Richards. According to the author electric melting of silver eliminates high crucible costs and the necessity of an experienced melter, so essential to gas or oil-fired crucible practice. To produce a ductile silver, it is essential to have temperature control, a reducing atmosphere and a quiet molten bath, and the difference between the pouring temperatures of bar silver (1038 to 1093 deg. C.) and of rolling mill and casting silver (1293 to 1304 deg. C.) is pointed out. A more ductile and tougher metal is produced by the introduction of an iron block into the bath. Dr. Richards pointed out that the features of the paper were the phenomena of oxygen absorption or spitting of the silver and the use of the iron (wrought) block. The paper describes an electric silver melting equipment.

Dr. E. F. Northrup, Ajax Electrothermic Corporation, Trenton, N. J., recounted some experiences in melting about 1,000,000 lb. of silver and the difficulty with small holes in the rolled product, such as thin sheets, suggesting that perhaps an injury to the silver was

done pouring from the spout to the mold, and Dr. Fink said that the block of iron taken from silver bath had the appearance of being black or weather worn with a peculiar erosion, and Dr. Richards called attention to the fact that the pouring of all metals drags with them a certain amount of oxygen to a greater or less degree.

Nickel Silver from Electric Furnaces

"Electric Furnace Melting of Nickel Silver" was the subject of a paper by Dr. F. C. Thompson, professor at Sheffield University, England. It was abstracted by Dr. Richards and presented the advantages of the externally heated electric furnace for nickel silver melting as covering a reduction in the loss of zinc to less than 1 per cent, a minimizing of the occlusion of gases, and a tougher alloy owing to less carburization.

In the discussion it was pointed out by H. M. St. John that rocking arc furnaces are as good as induction in such cases and Dr. Gillett testified that he had melted nickel silver in such a furnace with little loss of zinc.

A description of muffled arc melting furnaces was the subject of a paper, "Recent Developments in Electric Furnaces of the Muffled Arc Type," by H. A. Winne, power and mining engineering department, General Electric Co., Schenectady, N. Y., which was abstracted by John Seede of that company. A description of the furnace appeared in THE IRON AGE of April 14 and 21, 1921.

British Brass Industry

"Modern Developments in the British Brass Industry," by Ernest A. Smith, British Non-Ferrous Metals Research Association, Birmingham, England, was presented in abstract by E. L. Baldwin, General Electric Co., Niagara Falls, N. Y. Actual conditions in the British brass industry were discussed, as well as the developments by means of the utilization of existing scientific and technical knowledge. The author covered electric brass furnaces in England, the extension, hot pressing and forging of brass; rolling mill practice; annealing; composition of industrial brasses and treatment and utilization of scrap brass.

A paper, "Aluminum-Copper Alloy," by R. J. Anderson, metallurgist U. S. Bureau of Mines, Pittsburgh, was read by title in the absence of the author and was not discussed.

Session on General Topics

The first session was devoted to papers of a general nature covering several different topics.

Deoxidizers for Non-Ferrous Castings

One of these was by Charles Vickers, "Experiences with Alkaline and Alkaline Earth Metals in Connection with Non-Ferrous Alloys." The author is a consulting foundry engineer, Buffalo. He discussed sodium and calcium as deoxidizing agents in non-ferrous alloys, and said that the former of all the alkaline metals serves as a suitable deoxidizing agent in making copper castings of superior torsional strength, while calcium, when in combination with an acid element, as silicon, produces castings of good electrical conductivity. Barium and strontium require a vast amount of research work in this connection, according to the author's experiences. He stated that this combination is being successfully used in the production of copper castings possessing high electrical conductivity.

Discussing this paper, Dr. Fink said that in developing an alloy suitable for the deoxidation of copper or bronzes, it is important that one take in account the melting point of the products of reaction. For example, when using calcium metal as a deoxidizer of copper, the high melting point of calcium oxide makes separation of the fluid copper from the solid calcium oxide difficult.

Dr. Richards added that besides the melting point one must take into account the coalescing power of the lime particles. If calcium oxide had the tendency to coalesce or gather together readily it would float to the top of the liquid metal.

John Seede and C. G. Schlenderberg, Westinghouse Electric & Mfg. Co., both emphasized the importance

of high electrical conductivity in cast copper for electrical purposes, and the objection to using any deoxidizer which is not completely eliminated.

New Corrosion Theory

"A New Theory of the Corrosion of Iron," by J. Newton Friend, municipal technical school, Birmingham, England, was presented in abstract by Dr. Fink. After discussing the known facts and theories and the still unexplained phenomena of rusting, the author puts forward an auto-colloidal theory which postulates the corrosion as starting by the formation of colloidal ferrous oxide which, by contact with the air, flocculates to hydrated ferric oxide, which latter is alternately reduced by contact with iron and oxidized by contact with air, thus continuing the corrosion and the production of rust.

W. E. Hughes, electrometallurgist in H. C. H. Carpenter's private laboratory, London, England, referred to a recent experimental confirmation of Friend's theory. Under the microscope the progress of corrosion was actually observed to proceed in a manner very close to that outlined by Dr. Friend.

Rust Prevention by Slushing

A paper entitled "Rust Prevention by Slushing" was presented by Haakon Styri, chief S. K. F. Research Laboratory, Philadelphia, who emphasized the importance of preventing rust on steel parts which cannot be given a permanent coating of paint or metal. Tools, arms and ball bearings are among the products which must be protected with a temporary covering, such as

grease. "It happens," he said, "that we have found on slushed balls and bearings in our stock rooms that rust develops under the slushing grease, and it happens also that material in process will rust. In order to eliminate these difficulties we have undertaken a rather thorough investigation and have shown that a prerequisite for protection against rust by greases is a thorough cleaning of the steel parts by an aqueous solution, preferably an oil emulsion, which leaves a thin oil film for a short time protection. Such an oil emulsion is also a very good grinding liquid. It protects from rust and gives a fine finish."

Söderberg Electrodes

At the conclusion of one of the sessions Professor Richards gave a brief account of the recent installations in Norway and Sweden of the Söderberg self-baking carbon electrode, described in THE IRON AGE, April 22, 1920. He spent the greater part of the past summer in those countries and said that in one instance as much as 1000 amperes per electrode were used. A tilting 6-ton Heroult furnace has been fitted out with these electrodes, which are fed in in sections 7 ft. long; the roof was about 3 ft. above the bath. Dr. Richards also referred briefly to the use of the Söderberg electrode for aluminum furnaces.

The Spring Meeting

Announcement was made that the annual spring meeting will be held in Baltimore next April, and that one of the features will be a symposium on electric furnace iron castings.

Malleable Castings Research Program Bears Fruit

Dissemination of Technical Data Among Member Plants

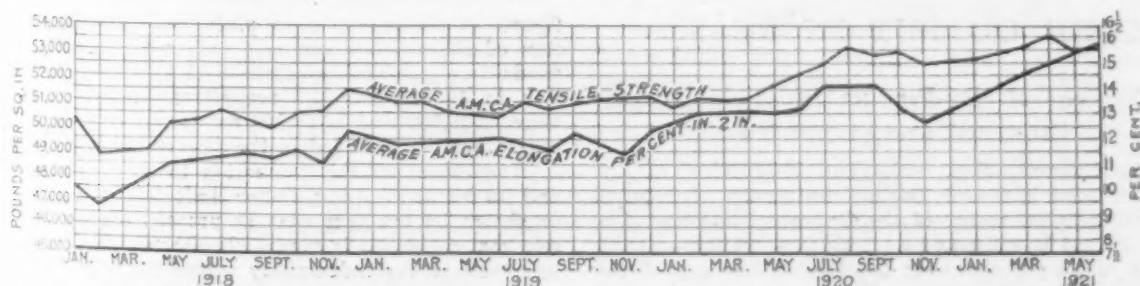
Results in Steady Improvement in Quality of Product

COVERING the result of the tensile test of bars sent daily from each plant, a bulletin has just been issued from the office of Enrique Touceda, Albany, N. Y., consulting engineer for the American Malleable Castings Association. The bulletin throws an interesting light on the results of consistent research work covering a period of years, the value of which has been particularly demonstrated during the past three or four years.

Those who have kept in touch with the commendable work fostered by the association in the improvement of

iron in ductility. The result was that the inferior product, in many cases malleable in name only, repeatedly proved its unworthiness in service, and cast a suspicion and stigma on all malleable castings, regardless of quality.

But the foresight of the association saved the industry from impending disaster, for, some years after its organization, a competent engineer and metallurgist was commissioned to inaugurate and carry on an intensive research program. As fast as this work bore fruit, the findings were disseminated among the mem-



In This Diagram the Base Line Represents the Standard A. S. T. M. Requirements in Both Tensile Strength and Elongation. The two curves show average results obtained by A. M. C. A. plants

malleable castings will recall the unhealthy condition in which the malleable industry found itself some seven or eight years ago. Except in a few cases, there was at that time no such thing as individual uniformity, either in manufacturing methods or in the resultant product of different malleable foundries. This condition was due largely to the lack of authoritative information on correct metallurgical practise, a haziness and uncertainty concerning air furnace and annealing oven construction, coupled with a secretive policy pursued by those plants which were making some progress through their own efforts at research.

Foundries that were still working in the dark continued to turn out a product lacking in all the qualities possessed by the better grade malleable castings obtainable to-day, and one that was little better than gray

ber plants in the nature of recommendations for alterations in general plant practises, and great improvement in the physical properties of malleable iron has resulted since that time.

Malleable castings as at present manufactured, in conformity with association standards, instead of being of uncertain quality and lacking in uniformity, are of high quality and integrity. They are said to be on a plane of dependability the equal, if not the superior, of the best mild steel casting or forging, while they can be machined at almost double the speed of either.

How Much the Improvement Has Been

The most marked advance in development has been made in the past 3½ years, during which period the

ultimate tensile strength of the product of association members as a whole has increased from an average somewhat under 49,000 lb. per sq. in. to over 53,000 lb.; and from an average elongation under 10 per cent in 2 in. to nearly 16 per cent.

Reports of bars tested by the consulting engineer for the month of June, in the bulletin referred to in the opening paragraph, show the highest average percentage of elongation of the association as a whole was attained, 15.77 per cent in 2 in., or over twice the elongation required by the American Society for Testing Materials in its standard specification for malleable cast iron. Since elongation, which is the measure of ductility, is the property on which malleability depends, it will be seen that this report marks a new high level in the research program. Since the first of the year, the rise in percentage of elongation has been steady and uninterrupted, and has increased a full 2 per cent.

High water mark for average ultimate tensile strength was reached in April of this year, when the figure of 53,530 lb. per sq. in. was recorded. The June value for this property was 53,038 lb., which is in excess of the A.S.T.M. requirements by slightly over 8,000 lb.

Reference to the chart, showing average ultimate tensile strength and elongation for the product of the membership as a whole, for 1918, 1919, 1920 and the first six months of 1921, indicates clearly how these two properties have increased during this interval. The average of both properties has always been well in excess of the A.S.T.M. standard requirements of 45,000 lb. per sq. in. tensile strength and $7\frac{1}{2}$ per cent elongation in 2 in. It is clear that this margin, when added to the factor of safety already included in standard specifications, offers exceptional safeguards to the user of those malleable castings furnished by a majority of the members of the association.

Why the "Ups and Downs" in the Chart

The constancy in the average values of these properties maintained throughout 1919 and the spring of 1920, with little apparent improvement over a period of several months, is readily accounted for by the fact that during that time 22 new plants were added to the list of test bar contributors. None of these had previously profited by the research work, and their submitted test bars in most cases had the effect of lowering the general average of the association, until the

effect of the new influence began to assert itself. The same effect was felt from August to December of 1920, when four new contributors were added. No new contributors were added from April to August, 1920, nor from December, 1920, to June of this year.

This fact, taken in conjunction with the improvement in quality of the new contributors through the assistance of the consulting engineer and his corps of visiting inspectors, had the effect of a steady and rapid increase in both physical properties. The slight retrogression in the average values of both properties, marked by the dropping of the curves from August to November of 1920, is explained by Professor Touceda as having been due to the serious handicap experienced by the foundries in getting good pig iron and coal during that exceptional period of demand for all commodities.

Another interesting fact revealed by the bulletin is the high percentage of perfect scores made by members of the association. By a perfect score is meant the ability of every bar submitted by a member to equal or surpass the standard specifications of 45,000 lb. tensile strength or $7\frac{1}{2}$ per cent elongation in 2 in. In June of the present year 87 per cent of the contributors made perfect scores. Comparing this record with those for the same month of the previous years, we find that perfect scores were attained by but 29 per cent of the contributors in June of 1918, 57 per cent in 1919, 74 per cent in 1920. Out of a total of 31 contributors in June, 1918, of whom 29 per cent attained perfection, all but one made perfect scores in June of the present year. Only 2.53 per cent of all bars cast and submitted for test during June failed to pass the standard A.S.T.M. specifications, as against 15.12 per cent for June, 1918.

This general improvement of the product of all members is reflected in the number of certificates that were awarded by the consulting engineer for the quarter ending June 30; sixty-one plants having been awarded the coveted certificate, the highest number yet issued for any quarter. The awarding of a certificate is not based upon the test bar record alone; the general plant practise as reported by the consulting engineer's corp of inspectors being considered in its effect upon the product. Through this safeguard, the purchaser is assured that the test bar record of each day's production can be considered as truly representative of the castings. Castings made by certificate-holding plants are called "certified" malleable castings.

COKE OUTPUT INCREASES

Production of By-Product Fuel in August Estimated at 1,402,000 Tons

WASHINGTON, Sept. 27.—The production of by-product coke improved during the month of August, according to the report of the Geological Survey. The total output is estimated at 1,402,000 net tons, an increase of 9.1 per cent over the 1,285,000 tons produced in July. These figures are based on reports from 69 of the 70 by-product plants in the United States and include estimates for the company not reporting. Production during August was 38 per cent of the rated monthly capacity of about 3,861,000 tons. Of the total number of plants, 54 were active and 16 were idle.

Owing to the increase in production of beehive coke to 248,000 tons, the total production of coke in the United States in August reached 1,650,000 net tons. When compared with the record for July, this was an increase of 185,000 tons and exceeded the June output by 8000 tons. Compared with the average monthly production in 1920, however, August production showed a decrease of 62 per cent.

The highest monthly average of by-product coke, according to the survey, was attained in 1920, when it was 2,565,000 net tons, while the highest monthly average of beehive coke during the past four years was attained in 1917, when it was 2,764,000 net tons. The

figures of the survey show plainly the change in position of the two processes of coke production, the by-product output having outstripped the beehive production in 1919, when the respective monthly averages were 2,565,000 and 1,748,000 net tons. Screenings and breeze are not included in the figures of production.

The extent of the depression in the coke industry and its importance is a factor limiting coal production, as shown by the fact that at present the quantity of raw coal consumed is over 4,500,000 net tons per month less than in the industrially active year, 1918.

The highest monthly average of coal consumption in by-product ovens was in 1920, and amounted to 3,685,000 net tons, while the lowest consumption since 1917 was in July, 1921, which amounted to 1,864,000 tons. Beehive ovens consumed a monthly average of 4,354,000 net tons of coal in 1917, and reached their lowest point in July, 1921, when the consumption of coal by those ovens was only 286,000 net tons. These figures assumed a yield of merchantable coke of 69.6 per cent in the coal charge in by-product ovens, and 63.4 per cent in beehive ovens.

Production of soft coal showed a decided improvement during the week ended Sept. 17, and for the first time since early in June passed the 8,000,000 ton mark. The total output, including lignite, coal coked at the mine, and mine fuel, is estimated at 8,139,000 net tons. In comparison with the week ended Sept. 3, the most recent week of full time production, this was an increase of 533,000 tons, or slightly over 7 per cent.

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Need of a Survey in Steel

What percentage of the country's iron and steel output is taken by the railroads? Where does the automobile industry stand in the list of consumers? How much steel is bought in a year for the purposes of agriculture, for mining, for the production of petroleum, for building, for maintaining and extending the iron and steel industry itself? How much goes to the industries producing textiles, chemicals, foods? Where in the consuming list are the industries devoted to clay, leather and rubber products?

These questions are constantly being asked, not only by producers of iron and steel, but in the great collateral activities represented by the machinery and all metal working trades. When a steel company seeks an additional outlet for its ingot capacity, the choice of the new finished material line is preceded by a careful survey to determine the relation of supply and demand in the various fields. This procedure has been gone through repeatedly in the past 20 years as steel companies which once rolled only billets and rails and bars have taken on one by one other lines, as plates, shapes, sheets, wire, tin plate or pipe.

The fact is, however, that there is a notable lack of exact knowledge in the steel industry itself concerning the channels of steel consumption. It is true also that producers of foundry pig iron as a rule can make but the roughest approximation of the final destinations of the castings into which their pig iron enters, or of the machines into which the castings are assembled.

It is no easy matter to apportion the steel consumption of the United States. The railroads stand at the head of the list of consumers, but estimates of the railroad percentage which have found acceptance have ranged all the way from 20 to 40. Apart from the railroads, it is well known that various industries take considerable percentages of the country's rolling mill output, shipyards, agricultural implement works, car works, mining, the automobile industry, fabricating shops standing well up in the list. Then there is Government work and municipal work. No small tonnage feeds down into lines which reach the ultimate consumer through the hard-

ware store and plumbing and sheet metal shops. Then there is the total, by no means small, made up of a great number of unmeasured and immeasurable uses. There is the steel of wearing apparel, the steel staple of the book binder, and the steel of the key ring. The insignificant crimped bottle cap amounts to more than 25,000 tons of steel per year.

The concentration of the country for three years on steel production for war purposes put all previous reckonings as to channels of steel consumption out of joint. To-day there is a demand from many directions for information that is up to date. The old percentages of railroad consumption do not count. For many months railroad buying has been an indeterminate quantity, and the new place it will take in the consuming list may be difficult to measure for a good many months more. The readjustment through which the country is passing will bring many changes in the distribution of steel output in the period just ahead. Iron and steel manufacturers will need all the light that can be thrown on the question of the ultimate destination of rolling mill products in every line. Why may not the American Iron and Steel Institute function in making the survey of iron and steel uses that will give the industry the chart it needs? Such an undertaking well carried out would yield the most valuable results. The institute at the same time would acquire material indicating the directions in which steel manufacture could most usefully expand. It must be said that the steel industry has not been forward in propaganda work—in finding and developing new uses for steel. The record of the cement industry in that respect is well worthy of imitation.

If the directors of the American Iron and Steel Institute have been questioning in what direction the institute may extend its usefulness with the largest results, we commend to their consideration these two lines of research: First, on what sources of demand has the steel industry depended in the recent past, and to what extent in the case of each? Second, in what directions, new and old, can propaganda work be carried on with best effect for the increase of iron and steel consumption at home and abroad?

Normal in Industrial Growth

No small part of the present dissatisfaction with industrial conditions is due to expecting too much. The United States has had a wonderful industrial development. The disposition is to regard this as coming naturally, like sunshine or the tides, when the fact is that great effort must be put forth. Unless we invent something or work harder or more efficiently, we cannot expect production or commercial movements or any of the indexes of activity to show an increase greater than the growth in population. That growth, from 1910 to 1920, was 14.9 per cent.

We should recognize that the past decade has been particularly lean in developments that make for efficiency and hard work, as well as in inventions that reduce the amount of effort necessary to produce a given result. One of the most notable things that has occurred in the decade 1911 to 1921 has been an increase in the number of motor vehicles in use from less than half a million to more than ten million. Other things being equal, the effort necessary to operate and repair these vehicles and supply them with their necessities must be taken from something else. That can be done, but the question must be faced whether abnormal growth in any line, particularly one contributing largely to pleasure, represents real progress when it is secured at the expense of normal development in other directions.

The common thinking is that we ought to be and are increasing our activities by more than the 15 per cent increase in population in a decade. But results in various fields are far from bearing out that view. A 15 per cent increase in bituminous coal production in ten years would give us about 490,000,000 tons for this year, while the actual production promises to be about 400,000,000 tons, or about 18 per cent less. It is to be remembered that while there is work in producing coal there is much more work in consuming coal. While we might have made progress whereby we can properly spend effort in consuming coal that was formerly expended in doing something less useful, we should also have made progress in economical utilization of coal, whereby a ton would do more work now than ten years ago.

We expect the railroads to haul more freight year by year per unit of track and equipment. The fact is that the rate of movement in ton-miles in the first six months of this year was about 25 per cent greater than the average rate ten years ago, while our population increased only 15 per cent. Per unit of transportation furnished there are probably more men employed on railroads now than ten years ago, but to give proof of economic progress, we should have increased the efficiency of the men or the physical facilities, since otherwise we have to draw the effort from some other activity.

Some familiar facts of performance in the trades having to do with building warrant the assertion that in this important industrial group the average of individual effort has declined rather than advanced. The labor unions in those trades, in some cases aided and abetted by employers, have brought about conditions that instead of stimulating have tended to kill building initiative.

The truth is, our industrial organization has not

become so much more efficient that we can do everything on a scale that is a distinct advance over ten years ago. Last year we seemed to be very active, but the pronounced activity in certain lines was largely at the expense of others. For the future conditions will force us to pay for what we get. If we have greatly expanded activities we must pay for the increase by hard work, efficiency and invention.

The Menace of the Mark

Comment on the menace to American trade in the low value of the German mark diverts attention from the vastly more serious menace of a collapse in German finance. Relatively, it is a small matter that German exports are encouraged, if indeed it is at all disadvantageous to the United States that Germany should have an export trade.

It is not the decline of the mark, but the declining of the mark, with a trend toward no value at all, that has the threatening aspect. Were the mark stabilized, no matter at what figure, adjustments would occur. The French franc is valued at only a trifle over seven cents, against 19.3 cents at gold parity, but we do not have a flood of French goods. In the first seven months of this year our imports from France, according to the official figures, were 65 per cent of our exports to France. There is an adjustment, in that prices in France relative to prices in the United States are in relation to the depreciation in exchange.

The German mark dropped in exchange to four-fifths of a cent last week, against 23.8 cents at gold parity. Even at that low level a trade basis could be established, but a steadily declining value is another matter entirely. Prices and wages in Germany have not advanced in keeping with the decline in the mark, and thus Germany has low wages with which to make exported goods.

The decline of the mark is due to the activity of the printing presses. German note circulation before the war was 2 billion marks. In 1918 it was 16 billion. Now it is 82 billion and the printing presses are still going. Many bankers believe there is a sinister purpose behind this activity, for continuance of this policy must result in German financial collapse, and that would mean complete collapse. There is the menace of demoralization of European currencies, but that is only one thing. Industrial and moral collapse of Germany could not be without the most serious results in other European countries. A representative of the American steel industry, just returned from three months' sojourn in France, during which time he studied conditions in detail, gives it as his opinion that there is but one menace to France's complete recovery, and that is a collapse of Germany.

It is not a question of what the Germans have done to the mark. It is a question of what they are doing and intend to do. Were the German Government's policy directed to a stabilization of the mark, trade and other conditions could adjust themselves. The gravity of the situation has long been recognized by the British and French Governments, which have as ambassadors to Berlin men very well versed in finance and able to advise and co-operate with the German Government along the line of rehabilitating German finances, but the

circumstantial evidence is that advice, if given, has not been heeded.

Before the possibilities threatened by the financial policy being pursued by the German Government, the possible loss of a little of our merchandise trade sinks into insignificance. Always our domestic trade is by far the greater concern, and it is difficult to imagine its being conducted actively and with confidence if there is not a moderate degree of stability in Europe.

Electric Non-Ferrous Metallurgy

One of the points emphasized in the symposium on non-ferrous metallurgy which American electro-chemists conducted at their annual fall meeting last week, as reported on other pages, was the wide use of electric melting in the industry. This is true not only of copper and brass but also of the higher priced metals, as silver and nickel-silver. It was brought out that when operating conditions are normal, electric furnace melting of brass or copper can be conducted at close to one-half the cost of crucible melting and that it is highly efficient and satisfactory. Such economy, however, is only attained on a fairly full operation. There was cited the action of large brass rolling mills in completing contemplated electric furnace installations very lately and in going ahead with their program of operating entirely with electricity, and this in the face of unfavorable business conditions.

The use of electric furnaces in American mints where silver and other coins are made has shown a considerable increase. While aluminum and its alloys are more difficult to handle than some of the others, their manipulation in electric furnaces was reported as in most cases satisfactory and economical. Where large scale operation is possible it is evident that electricity has come to stay not only in brass and copper where it had its first success, but in practically all non-ferrous alloys.

Patent Office Needs Men

WASHINGTON, Oct. 4.—Relief in the unemployment situation could be given by the passage of the bill now before Congress providing for aid to the Patent Office, according to Thomas S. Robertson, United States Commissioner of Patents. In an interview Mr. Robertson said:

"One thing that the present Congress should do to aid in relieving the unemployment situation is to pass promptly H.R. 7077 for the relief of the Patent Office. Many new industries which would employ men are being delayed because their promoters will not go forward with the work until they are assured that the patent situation is favorable to the new project. At the present time, the patent office has over 60,000 cases awaiting action. In some branches, it is over 11 months after an application for patent is filed before the invention can be reached for consideration, and in the meantime the factories stand idle.

"The cause of this delay is lack of a sufficient force in the Patent Office, which is valiantly trying to cope with its rapidly increasing work with an entirely inadequate force. The Patent Office is self-supporting. The bill now before the House of Representatives will give urgently needed relief without in any way eating into the taxes of the people, as it only allows the Patent Office to use some of its own surplus receipts."

CORRESPONDENCE

Heat Utilization

To the Editor: Combustion losses are comparatively insignificant when compared with the poor utilization of the heat released by combustion. True economy may be attained only when all of the heat practically utilizable is converted into useful service. In order that heat may be utilized for a particular purpose, its potential or temperature must be sufficient to effect the desired operation, and a sufficient quantity of heat must be available. Potential heat energy in the form of coal, oil, wood or hydropower is the most important asset of the world. Fuel conservation has not a tithe the importance of heat energy conservation.

Iron cannot be brought to a forging heat, even when in the form of the finest wire, by all the millions of thermal units available in the hot water springs of the Yellowstone National Park acting for millions of eons of time. Converted into the form of electricity, this energy may be utilized to melt steel in the electric furnace.

Years ago the manufacture of steel was a secret art. The heat was supplied by burning coal. Hours and hours of careful furnace operation resulted in a few small crucibles of molten steel so close to its freezing temperature that it was difficult to teem it successfully. Necessarily steel was costly. Then came the gas producer and the regenerative furnace.

Steel had been the weapon of princes and kings. Now steel became the servant of man, in peace, in war. Its output is measured in millions of tons. All this was rendered possible by the better utilization of heat energy.

Potential heat energy is a resource of the greatest value to man. Heat, power and light are its products. Modern civilization depends upon heat utilization. The real problem of the world is not the conservation of the great natural resources, but their economical utilization.

A. D. WILLIAMS,

Consulting engineer.

P. O. Box 92, Newark, N. J.

Prevention of Brittleness in the Pickling of Steel

To the Editor: The writer has noted with interest an exchange of letters in your publication relative to corroding brittleness. On Sept. 22, Kenneth B. Lewis refers to the generation of hydrogen as the result or acid attack upon steel and to the generally recognized assumption that this generation of hydrogen is the cause of pickling brittleness.

In connection with this discussion it is of interest to note that there is about to be put on the market in this country an organic chemical known as pikelette, intended to be mixed in minute proportions in the pickling bath. It is claimed as one of the functions of pikelette that it suppresses the formation of hydrogen and hence eliminates in steel the pickling brittleness referred to. The compound is of foreign invention and is at present widely used in Great Britain and on the Continent. In Germany it is used by practically every steel plant that employs the pickling process.

GEORGE W. EMLIN, JR.,

Philadelphia, Sept. 30.

Matthew Addy Co.

American Iron and Steel Institute Meeting

The date for the fall meeting of the American Iron and Steel Institute has not been decided. It was expected that the meeting would be held Friday, Oct. 28, the usual time, but as it is hoped that Marshal Foch will be the guest of honor and as he will not sail until Oct. 22, it is probable that the meeting will be postponed until some time early in November.

A GREATER BUSINESS PRESS

Course in Industrial Publishing to Be Started in New York

A noteworthy step was taken by the technical and industrial journals of New York at a recent meeting of the New York Business Publishers' Association in the establishment of a course in industrial publishing. Such a course has been in contemplation for a long time. It has taken just such an experience as that through which all industry is now passing to bring home to the men of the industrial press the call for a forward movement. Industry is looking more than ever to the journals published in its various fields to show the way. That those who are engaged in business journalism and those who are to come into it as their life work may be better equipped to serve business, a course has been organized and will be conducted by the Business Training Corporation of New York, which the New York Business Publishers' Corporation has retained for that purpose. The course will include lectures, conferences, textbook work, problems and a personal commenting service. Classes are about to start in New York and soon will be organized in other publishing centers. One of these classes is now being formed in the office of THE IRON AGE.

Although the course is designed primarily for the benefit of members of the editorial and business staffs of trade and technical periodicals, it will be open to all who are interested in the field. It is intended not only to give instruction, but to develop the business as a whole by setting up higher standards of editorial and business service and showing how these standards can be attained.

Among the topics covered are: Distinctive features of industrial publishing; its code of ethics; personal qualities required for success; determining editorial policies; getting the right kind of articles; securing accurate reports and data; writing for industrial papers; building up circulation; creating advertising; departmental management; service to the industry; service to advertisers; basic policies and tendencies.

"We look upon this undertaking," said H. M. Swetland, president of the United Publishers' Corporation and chairman of the educational committee, "as one of the most important steps ever taken toward making industrial papers even more valuable to their readers and advertisers. This course will help us all to gain a broader and more accurate knowledge of the fundamentals of the business; it will provide a sound and thorough training for those who are coming along on our papers; and it will serve to attract and develop new men for us from the industries we serve."

Steel for Navy Yards

WASHINGTON, Oct. 4.—The Bureau of Supplies and Accounts, Navy Department, is asking bids to be submitted by Nov. 1 to furnish approximately 1600 tons of shapes, 2100 tons of bars and 1200 tons of black sheets. These lots are for stock purposes at various Navy yards and are practically the same as those on which bids were asked in August but subsequently withdrawn.

Ore Case Hearings

WASHINGTON, Oct. 4.—The Interstate Commerce Commission has set Oct. 10 as the day to resume iron ore case hearings in Chicago before Examiner Hosmer. The case involves the protest of ore shippers against both old rates and increased rates on shipments from Lake Superior mines to Lake Erie ports.

A continuous electrically heated ring type gear furnace is to be installed by the George J. Hagan Co., Pittsburgh, in the Dodge Brothers automobile plant at Detroit. The furnace is to work on a 220-volt, 3-phase, 60-cycle power service and has a rating of 90 kw.

COMING MEETINGS

October

American Manufacturers Export Association. Oct. 5 and 6. Annual meeting, Waldorf-Astoria Hotel, New York. Secretary, A. W. Willmann, 160 Broadway, New York.

Society of Industrial Engineers. Oct. 5 to 7. Fall meeting, Springfield, Mass. Business Manager, George C. Dent, 327 South La Salle Street, Chicago.

National Association of Purchasing Agents. Oct. 10 to 13. Claypool Hotel, Indianapolis. Secretary, L. F. Boffey, 19 Park Place, New York.

National Implement and Vehicle Association. Oct. 12 to 14. Congress Hotel, Chicago. Secretary, E. W. McCullough, 76 West Monroe Street, Chicago.

American Society of Lubrication Engineers. Oct. 13 and 14. First annual convention, Chicago. Secretary, J. L. Overholt, Monadnock Block, Chicago.

American Gear Manufacturers' Association. Oct. 13 to 15. Fall meeting, Powers Hotel, Rochester, N. Y. Secretary, F. D. Hamlin, 4401 Germantown Avenue, Philadelphia.

National Hardware Association. Oct. 18. Meeting of metal branch, Marlborough-Blenheim Hotel, Atlantic City, N. J. Secretary, George A. Fernley, 505 Arch Street, Philadelphia.

National Machine Tool Builders' Association. Oct. 18, 19 and 20. Annual meeting, Hotel Astor, New York. General Manager, E. F. DuBrul, 817 Provident Bank Building, Cincinnati.

National Supply and Machinery Dealers' Association. Oct. 19. Meeting of machine tool section, Hotel Astor, New York. Secretary, Thomas A. Fernley, 505 Arch Street, Philadelphia.

Industrial Relations Conference. Oct. 24 to 27. Harrisburg, Pa., under auspices of Department of Labor and Industry of Pennsylvania.

November

Industrial Cost Association. Nov. 2, 3 and 4. National Cost Conference, Pittsburgh. Secretary, A. A. Alles, Jr., Peoples Bank Building, Pittsburgh.

National Founders' Association. Nov. 16 and 17. Annual meeting, Hotel Astor, New York. Secretary, J. M. Taylor, 29 South La Salle Street, Chicago.

The Iron Mining Industry

WASHINGTON, Sept. 30.—The following statement of results of the 1920 Census of Mines and Quarries, covering the calendar year 1919, is a summary by totals, of the principal statistics compiled for producing iron-ore enterprises in the United States. Iron ore was mined in the following states: Alabama, Arkansas, California, Connecticut, Georgia, Idaho, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, New Jersey, New Mexico, New York, North Carolina, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin and Wyoming. The amount reported as the total value of products includes the estimated value of ore mined in 1919, based on the sales value of ores shipped. This amount also includes receipts for by-products, power sold, and miscellaneous work or services furnished other enterprises.

Iron Ore Mining Industry—Principal Statistics for Producing Enterprises

Number of enterprises.....	292
Number of mines.....	474
Number of beneficiating plants.....	74
Mineral lands operated, total (acres).....	248,262
Persons engaged in industry (total).....	49,223
Proprietors and firm members (total).....	41
Salaried employees.....	2,996
Wage earners (average number).....	46,186
Wage earners Dec. 15 or nearest representative day:	
Above ground.....	19,111
Below ground.....	29,074
Power used (horsepower).....	372,479
Capital.....	\$562,193,814
Principal expenses:	
Salaries.....	\$6,960,769
Wages.....	\$76,276,616
Contract work.....	\$1,671,783
Supplies and materials.....	\$27,312,102
Fuel.....	\$9,722,423
Power.....	\$1,594,231
Royalties and rents.....	\$24,997,552
Taxes.....	\$30,965,448
Expenditures for development (included in the above items).....	\$14,657,841
Products, total value.....	\$219,539,045
Iron ore:	
Quantity (tons, 2,240 lb.).....	61,173,354
Value at mines.....	\$218,217,995

IRON OUTPUT GAINS AGAIN

September Production 2070 Tons Per Day Larger Than in August

Net Gain of Twelve Furnaces Largest in Over a Year

The output of blast furnaces in September continued to show the moderate improvement which set in in August, after many months of decline. The total output was 2070 tons per day larger than in August as compared with a gain of 2891 tons per day in August over that of July. The feature of the returns is the relatively large number of furnaces blown in during the month.

The production of coke and anthracite furnaces for the 30 days in September amounted to 985,529 gross tons or 32,850 tons per day as compared with 954,193 tons or 30,780 tons per day in August. In September, 1920, the output was 3,129,323 tons or 104,310 tons per day.

The total number of furnaces in blast on Oct. 1 was 82 as compared with 70 on Sept. 1, with 69 on Aug. 1 with 76 on July 1 and with 201 on Jan. 1. This records the first marked increase in furnaces blown in since last fall, when the downward movement began. The 82 furnaces in blast on Oct. 1 had a capacity of 35,650 tons per day as compared with 30,770 tons per day for the 70 furnaces on Sept. 1. Fourteen furnaces were blown in and only two blown out or banked during September, which compares with a net loss of 250 furnaces in the ten months preceding the month of August this year.

The September output of manganese-iron alloys was 3289 tons, all of it ferromanganese, as compared with 3878 tons of the same alloy in August.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from September, 1920, is as follows:

1920	Steel Works	Merchant	Total
September	74,908	29,402	104,310
October	77,214	28,998	106,212
November	71,669	26,161	97,830
December	66,037	20,185	87,222
January, 1921	62,327	15,618	77,945
February	58,060	11,127	69,187
March	42,691	8,777	51,468
April	33,854	5,914	39,768
May	33,054	6,340	39,394
June	29,444	6,050	35,494
July	23,086	4,803	27,889
August	26,037	4,743	30,780
September	27,189	5,661	32,850

The figures for daily average production, beginning with January, 1915, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1915—Gross Tons

	1915	1916	1917	1918	1919	1920	1921
Jan.	51,659	102,746	101,643	77,799	106,525	97,264	77,945
Feb.	59,813	106,456	94,473	82,835	105,006	102,720	69,187
Mar.	66,575	107,667	104,832	103,648	99,685	108,900	51,468
Apr.	70,550	107,592	111,165	109,607	82,607	91,327	39,768
May	73,015	108,422	110,238	111,175	68,002	96,312	39,394
June	79,361	107,053	109,002	110,793	70,495	101,451	35,494
July	82,691	104,017	107,820	110,354	78,340	98,931	27,889
Aug.	89,666	103,346	104,772	109,341	88,496	101,529	30,780
Sept.	95,085	106,745	104,465	113,942	82,932	104,310	32,850
Oct.	100,822	113,189	106,550	112,482	60,115	106,212	...
Nov.	101,244	110,394	106,859	111,802	79,745	97,830	...
Dec.	103,333	102,537	92,997	110,762	84,944	87,222	...

Among the furnaces blown in during September were the following: One Susquehanna furnace in the Buffalo district; one furnace of the American Steel & Wire Co. and one Alliquippa furnace of the Jones & Laughlin Co. in the Pittsburgh district; Nos. 2 and 3 New Castle furnaces of the Carnegie Steel Co. and No. 3 Shenango furnace in the Shenango Valley; the Cherry Valley and Mattie furnaces in the Mahoning Valley; two Central furnaces of the American Steel & Wire Co. and one River furnace in northern Ohio; Marting furnace of the Marting Iron & Steel Co. in southern Ohio; one Joliet furnace of the Illinois Steel Co. in Illinois and the Tuscaloosa furnace in Alabama.

Among those blown out or banked during Septem-

ber were the following: The Robeson furnace in the Lebanon Valley and the Princess furnace in Virginia.

Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the following totals of steel making iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total Production			Spiegeleisen and Ferromanganese		
	1919	1920	1921	1919	1920	1921
Jan.	2,430,022	2,232,455	1,932,159	32,787	23,957	22,228
Feb.	2,209,470	2,181,679	1,625,695	28,105	28,038	29,013
Mar.	2,277,507	2,480,668	1,323,443	26,644	35,275	41,294
Apr.	1,838,677	1,968,542	1,015,621	17,308	27,628	24,310
May	1,586,805	1,128,720	1,024,678	14,604	33,407	9,232
June	1,655,944	2,209,770	883,312	14,254	34,751	4,536
July	1,906,604	2,230,567	715,664	14,805	36,789	5,524
Aug.	2,108,566	2,254,943	807,144	17,419	36,985	3,878
Sept.	1,828,613	2,247,250	815,692	20,631	39,546	3,289
Oct.	1,295,690	2,393,644	.....	20,238	34,786	.....
Nov.	1,727,656	2,150,075	.....	19,964	26,944	.....
Dec.	1,916,249	2,047,167	.....	15,718	28,023	.....

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for September, and the three months preceding:

Pig Iron Production by Districts, Gross Tons

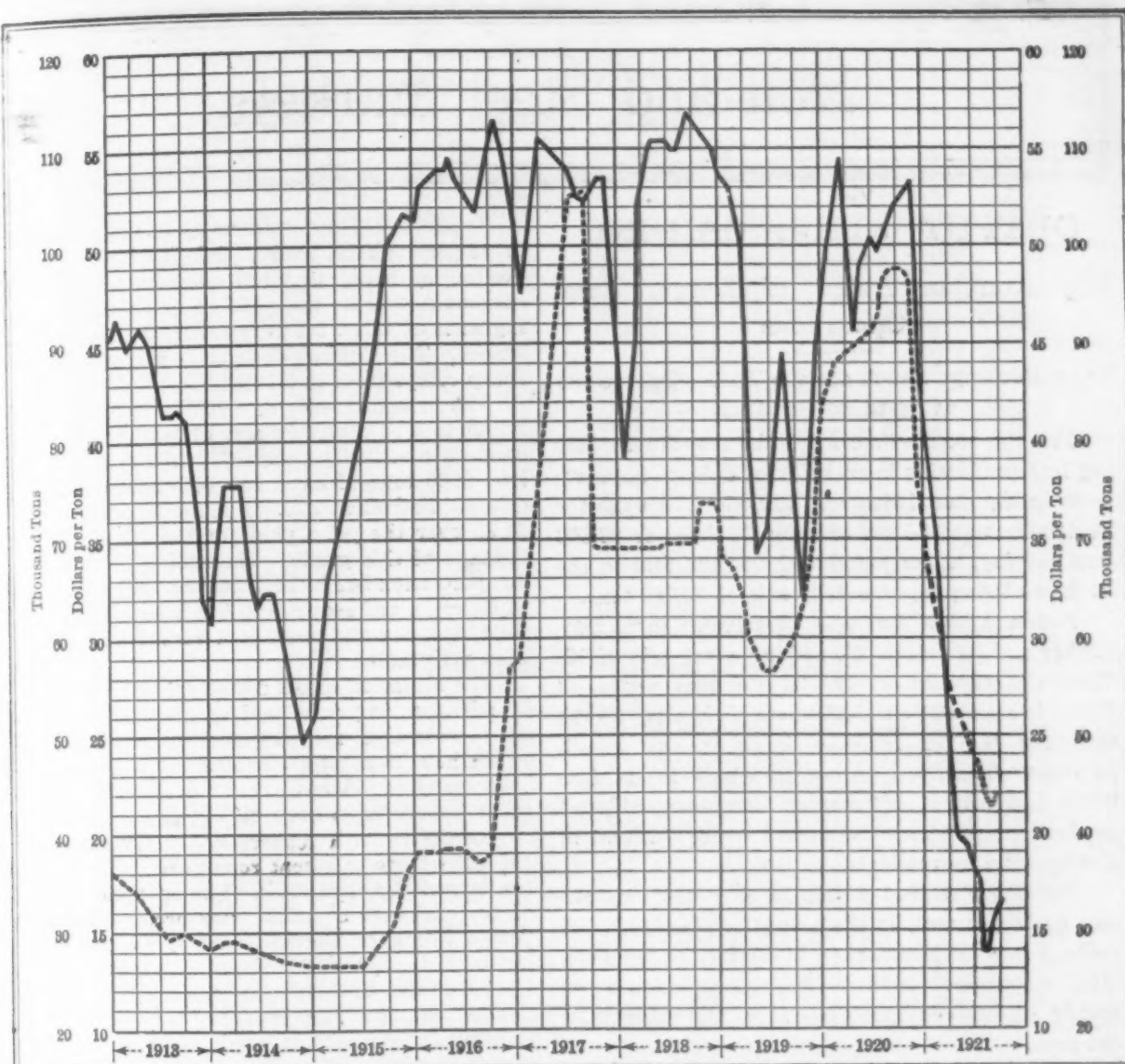
	September (30 days)	August (31 days)	July (31 days)	June (30 days)
New York	50,970	44,948	34,407	34,241
New Jersey	4,370	4,689	5,554	6,051
Lehigh Valley	27,566	33,014	24,059	29,929
Schuylkill Valley	23,126	20,735	19,210	21,172
Lower Susquehanna and Lebanon Valleys	21,903	23,939	20,401	25,809
Pittsburgh district	250,128	255,274	185,643	243,025
Shenango Valley	8,649	none	none	12,077
Western Penna.	60,073	47,565	47,680	63,802
Maryland, Virginia and Kentucky	16,046	15,470	14,201	15,289
Wheeling district	18,706	18,076	16,167	18,207
Mahoning Valley	125,705	111,722	92,305	88,515
Central and Northern Ohio	110,327	83,552	80,150	116,003
Southern Ohio	8,200	3,548	6,266	25,798
Illinois and Indiana	171,380	191,658	201,175	214,834
Mich., Minn., Mo. and Wis., Colo. and Wash.	14,641	27,304	50,764	56,857
Alabama	73,739	72,699	66,573	93,244
Tennessee	none	none	none	none
Total	985,529	954,193	864,555	1,064,833

Capacities in Blast Oct. 1

The following table shows the number of furnaces in blast Oct. 1 in the different districts and their capacity, also the number and daily capacity in gross tons of furnaces in blast Sept. 1:

Coke and Anthracite Furnaces in Blast

Location of Furnaces	Total Stacks	Oct. 1		Sept. 1	
		In Blast	Capacity per Day	In Blast	Capacity per Day
New York:					
Buffalo	22	5	1,725	4	1,450
Other New York	4	0	.....	0	.....
New Jersey	4	1	145	1	150
Pennsylvania:					
Lehigh Valley	18	2	920	2	1,065
Spiegel	2	0	.....	0	.....
Schuylkill Valley	15	2	770	2	670
Lower Susquehanna	10	1	400	1	430
Lebanon Valley	8	1	165	2	345
Ferro	2	0	.....	0	.....
Pittsburgh District	55	18	8,650	16	7,750
Ferro and Spiegel	4	1	110	1	125
Shenango Valley	19	3	1,150	0	.....
West. Pennsylvania	26	5	2,000	5	1,950
Maryland	6	1	440	1	400
Wheeling District	15	1	620	1	580
Ohio:					
Mahoning Valley	27	10	4,650	8	3,960
Central and Northern	26	9	4,100	6	2,950
Southern	16	2	440	1	115
Illinois and Indiana	42	12	6,380	11	5,900
Mich., Wis. and Minn.	11	1	485	1	485
Colorado and Missouri	6	0	.....	0	.....
The South:					
Virginia	16	0	.....	1	100
Kentucky	7	0	.....	0	.....
Alabama	41	7	2,500	6	2,345
Tenn., Ga and Texas	16	0	.....	0	.....
Total	418	82	35,650	70	30,770



The Full Line Represents the Daily Production of Pig Iron and the Dotted Line Is the Average of the Price Per Ton of No. 2 Southern Pig Iron at Cincinnati, Local No. 2 Iron at Chicago and No. 2X Iron at Philadelphia

Diagram of Pig Iron Production and Prices

The fluctuations in pig iron production from 1913 to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnace in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in the United States by Months, Beginning Jan. 1, 1917—Gross Tons

	1917	1918	1919	1920	1921
Jan.	3,150,938	2,411,768	3,302,260	3,015,181	2,416,292
Feb.	2,645,247	2,319,299	2,940,168	2,978,879	1,937,257
Mar.	3,251,352	3,213,091	3,090,243	3,375,907	1,595,522
Apr.	3,334,960	3,288,211	2,478,218	2,739,797	1,193,041
May	3,417,340	3,446,412	2,108,056	2,985,682	1,221,221
June	3,270,055	3,323,791	2,114,863	3,043,540	1,064,833
July	3,342,438	3,420,988	2,428,541	3,067,043	864,555
Aug.	3,247,947	3,389,585	2,743,388	3,147,402	954,193
Sept.	3,133,954	3,418,270	2,487,965	3,129,323	985,529
3 mos.	28,794,231	28,231,415	23,693,702	27,482,754	12,232,443
Oct.	3,303,038	3,486,941	1,863,558	3,292,597	.....
Nov.	3,205,794	3,354,074	2,392,350	2,934,908	.....
Dec.	2,882,918	3,433,617	2,633,268	2,703,855	.....
Total					
yr.	38,185,981	38,506,047	30,582,878	36,414,114	.....

*These totals do not include charcoal pig iron. The 1919 production of this iron was 327,097 tons.

Changes in Binghamton, N. Y., Plants

E. H. Titchener & Co., manufacturers of wire goods, now located on Spring Forest Avenue, Binghamton, N. Y., have purchased the plant on Walnut Street alongside the Erie railroad tracks occupied until last spring by the Binghamton factory of the American Fork & Hoe Co. The Stewart Phonograph Co., Cleveland, has purchased the Titchener plant. These transactions give the Titchener firm increased space, establish a new factory in Binghamton and provide for the use of an idle plant.

The firm of E. H. Titchener & Co. was organized in 1881, its principal product being wire staples. Since that time, it has built up a business in wire staples and miscellaneous articles, such as rings, hooks, eyes, pins, handles, also patented forms and novelties.

No Freight Reduction

No reduction in freight rates on iron ore, limestone and dolomite will be made by the railroads at this time, as requested by iron and steel interests of Pittsburgh and Youngstown. The industries asked for a reduction of 25 per cent. A conference on the subject was held recently in New York by representatives of the railroads and various large steel companies. Industrial representatives believe the reduction was deferred in view of a possible revision of freight charges early next year.

Iron and Steel Markets

OUTPUT STILL GAINING

Pig Iron an Index to Larger Steel Operations

Sheet Bookings Reach 260,000 Tons—Operations at 35 to 40 Per Cent

For the second time since the low dip in July pig iron production is an index of definite improvement in the steel industry. The pig iron total for September was 985,529 tons for 30 days, or 32,850 tons per day, as compared with 954,193 tons in the 31 days of August, or a daily rate of 30,780 tons.

Fourteen blast furnaces were blown in in September and two went out, making a net gain of 12. The daily capacity of the 82 furnaces active on Oct. 1 is estimated at 35,650 tons, as against 30,770 tons for the 70 furnaces in blast one month previous. The Steel Corporation blew in six furnaces last month, in view of the increased steel production required by recent large orders in sheets and wire products.

September showed a gain of over 900 tons per day, or 19 per cent, in the output of blast furnaces making iron for the market, in distinction from the steel companies' product, this gain following a steady succession of declines since the opening of the year.

A further pig iron gain is indicated for October, seven blast furnaces being scheduled to blow in in the first half of the month.

Steel Corporation operations are now at about 38 per cent of capacity as against 35 per cent last week. In the Chicago district the Illinois Steel Co. is on a 39 per cent basis this week and the Inland Steel Co. at 40 per cent.

There is little change from the recent alignment of demand which brought larger activity to wire, sheet, tin plate and pipe mills, without betterment in the rail, plate, shape and bar total. The advance in sheets, it now appears, was preceded by bookings of about 260,000 tons by Steel Corporation and independent mills. One order was for 1000 tons to go into steel barrels. The size of unrolled orders on the books of some of the rail mills is not calculated to hasten rail contracting for 1922. There are other rail mills that would welcome an early settlement of next year's rail prices and of freight reductions, that they might get to work.

Structural steel lettings of the week covering sizable projects aggregate fully 18,000 tons, with an 8000-ton structure for a Masonic temple at Detroit the conspicuous item, and fresh proposals total about half the amount, including 3000 tons for a new roadway for the Manhattan bridge in New York.

The St. Paul railroad is about to buy 3000 cars and is inquiring for 1000 steel underframes for its repair work.

Testimony is not uniform as to the recent effort to advance plates, shapes and bars. At least the decline in these products appears to have been checked and some independent producers are making sales at 1.60c. for bars and 1.65c. for plates and shapes. The Chicago district still shows continued sharp competition in all three lines.

The principal sales of foundry irons were about 12,000 tons at Cleveland and 10,000 tons to a Massachusetts machinery company, while in steel making iron 9000 tons of basic has been sold in the Philadelphia district at \$20.50, delivered, an advance of \$1.25 over the price paid for the last considerable tonnage of this grade. The selling of iron bought on speculation has had a somewhat depressing effect at Chicago, and resale iron has been a factor in the East, but for the most part recent advances have been maintained.

The situation in old material has been enlivened by advances in prices paid by dealers, and on sales of considerable railroad and other scrap higher prices have been paid. The efforts of dealers to get corresponding advances from steel companies and other buyers have been rather stiffly resisted.

Importers with connections in Germany cannot get mills there to accept round orders from American buyers for wire nails. The speculative feature of the exchange situation may account for the reported filling of German seaport warehouses, but business is apparently being diverted from the United States to South America and the Far East.

British steel makers report less trouble from Continental competition, owing mainly to slow deliveries from the Continent and partly to stiffening prices. Activity is increasing. Eighteen Cleveland district blast furnaces are now active, compared with eleven a month ago.

Pittsburgh

PITTSBURGH, Oct. 4.

October starts with promises of less accretions to steel company order books. This is not surprising in view of the fact that acceptance of large tonnages of wire products and sheets at the old prices prior to last month's advances has fortified a good many consumers and distributors against their immediate requirements and naturally there is some disposition to move slowly until some of these purchases have been digested. Such gains as have been recorded in business since about the middle of July have been confined pretty closely to the lighter products such as wire, nails, sheets, tin plate and pipe. There has been no very pronounced improvement in the demand for the tonnage products and it is the experience of the leading subsidiary of the Steel Corporation that September was a leaner month than August.

A number of the independent makers of plates, shapes and bars have advanced their quotations to meet those announced about ten days ago by the Steel Corporation, but so far as actual business is concerned it is impossible to record any advance over the prices which recently have been common. There is more structural business than there was even as recently as a month ago, but it is evident that fabricating companies had figured on material in stock because there has been only a slight gain in the mill orders for plain structural material. A definite and even

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 4, 1921	Sept. 27, 1921	Sept. 6, 1921	Oct. 5, 1920
No. 2X, Philadelphia...	\$21.84	\$21.84	\$20.84	\$53.57
No. 2, Valley furnace...	21.00	21.00	21.00	47.00
No. 2 Southern, Cin'ti...	23.50	23.50	23.50	46.50
No. 2, Birmingham, Ala.†	19.00	19.00	19.00	42.00
No. 2 foundry, Chicago*	21.00	22.00	21.00	46.00
Basic, del'd, eastern Pa...	20.50	19.25	19.00	51.26
Basic, Valley furnace...	19.25	19.25	19.00	46.00
Bessemer, Pittsburgh...	21.96	21.96	21.96	50.46
Malleable, Chicago*	21.00	22.00	21.00	46.50
Malleable, Valley...	20.50	20.50	20.00	50.00
Gray forge, Pittsburgh...	21.96	21.96	21.96	47.96
L. S. charcoal, Chicago...	31.50	31.50	33.50	58.50
Ferromanganese, del'd...	60.00	60.00	70.00	170.00

Rails, Billets, etc., Per Gross Ton:

	Oct. 4, 1921	Sept. 27, 1921	Sept. 6, 1921	Oct. 5, 1920
Bess. rails, heavy, at mill.	\$45.00	\$45.00	\$45.00	\$55.00
O-h. rails, heavy, at mill.	47.00	47.00	47.00	57.00
Bess. billets, Pittsburgh...	29.00	29.00	29.00	55.00
O-h. billets, Pittsburgh...	29.00	29.00	29.00	55.00
O-h. sheet bars, P'gh...	32.00	32.00	30.00	65.00
Forging billets, base, P'gh.	35.00	34.00	34.00	70.00
O-h. billets, Phila.	35.74	35.74	35.74	60.74
Wire rods, Pittsburgh...	41.00	41.00	38.00	75.00
Skelp, gr. steel, P'gh, lb..	1.60	1.60	1.70	3.25

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	1.95	1.95	2.00	4.85
Iron bars, Chicago...	1.75	1.75	1.75	3.75
Steel bars, Pittsburgh...	1.60	1.60	1.65	3.25
Steel bars, Chicago...	1.75	1.75	1.85	2.73
Steel bars, New York...	1.98	1.98	2.03	4.13
Tank plates, Pittsburgh...	1.60	1.60	1.70	3.25
Tank plates, Chicago...	1.65	1.65	1.75	3.02
Tank plates, New York...	1.98	1.98	2.08	3.63
Beams, etc., Pittsburgh...	1.60	1.60	1.70	3.10
Beams, Chicago...	1.75	1.75	1.80	2.83
Beams, etc., New York...	1.98	1.98	2.08	3.48
Steel hoops, Pittsburgh...	2.25	2.25	2.25	5.50

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	Oct. 4, 1921	Sept. 27, 1921	Sept. 6, 1921	Oct. 5, 1920
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.00	3.00	2.75	6.75
Sheets, galv., No. 28, P'gh.	4.00	4.00	3.75	8.25
Sheets, blue an't'd, 9 & 10.	2.25	2.25	2.25	5.00
Wire nails, Pittsburgh...	2.90	2.90	2.75	4.25
Plain wire, P'gh.....	2.60	2.60	2.50	3.75
Barbed wire, galv., P'gh..	3.55	3.55	3.40	4.45
Tin plate, 100-lb. box, P'gh.	\$5.25	\$5.25	\$5.25	\$9.00

Old Material, Per Gross Ton:

	Oct. 4, 1921	Sept. 27, 1921	Sept. 6, 1921	Oct. 5, 1920
Carwheels, Chicago	\$16.00	\$15.00	\$13.75	\$37.00
Carwheels, Philadelphia...	17.00	17.00	17.00	41.00
Heavy steel scrap, P'gh...	14.00	14.00	13.00	28.00
Heavy steel scrap, Phila...	11.75	11.50	11.50	23.00
Heavy steel scrap, Ch'go...	12.35	11.75	11.00	22.50
No. 1 cast, Pittsburgh...	17.50	17.00	16.50	41.00
No. 1 cast, Philadelphia...	17.00	17.00	17.00	39.00
No. 1 cast, Ch'go (net ton)	13.50	13.50	13.25	30.00
No. 1 RR. wrot, Phila....	15.50	15.50	14.50	31.00
No. 1 RR. wrot, Ch'go (net)	12.50	11.50	11.50	21.00

Coke, Connellsville,

Per Net Ton at Oven:	Cents	Cents	Cents	Cents
Furnace coke, prompt....	\$3.25	\$3.25	\$3.00	\$17.00
Foundry coke, prompt....	4.25	4.25	4.00	18.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	12.62½	12.25	12.00	18.25
Electrolytic copper, N. Y.	12.37½	12.12½	11.75	18.25
Zinc, St. Louis.....	4.55	4.35	4.20	7.50
Zinc, New York.....	5.05	4.85	4.70	7.65
Lead, St. Louis.....	4.50	4.45	4.20	7.50
Lead, New York.....	4.70	4.70	4.70	7.50
Tin, New York.....	26.75	26.75	27.25	42.50
Antimony (Asiatic), N. Y.	5.00	4.60	4.50	7.00

Composite Price, Oct. 4, 1921, Finished Steel, 2.236c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 83 per cent of the United States output of finished steel.	Sept. 27, 1921,	2.236c.
	Sept. 6, 1921,	2.279c.
	Oct. 5, 1920,	3.867c.
	10-year pre-war average,	1.634c.

Composite Price, Oct. 4, 1921, Pig Iron, \$19.93 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

}	Sept. 27, 1921,	\$20.10
	Sept. 6, 1921,	19.64
	Oct. 5, 1920,	44.59
	10-year pre-war average,	15.72

a substantial gain has been made in business as a whole as compared with the low point of the year, but there is no pretense that conditions are satisfactory and more and more the opinion is becoming general that the new year will have arrived before what may be termed a real turn will be seen.

There is general recognition of the fact that iron and steel prices to-day are as low as they reasonably can be without further wage reductions and a wage cut is a step the industry as a whole hesitates to take, in view of the fact that the reduction in wages to iron and steel plant workmen has far outdistanced those in a large number of other industries. The problem of unemployment is getting the serious attention of steel manufacturers and the recent efforts to get prices up is associated closely with an attempt to keep plants running and to provide as much work for the greatest number of men possible. A solid foundation for business will hardly be established until the labor unions recognize the changed economic and industrial conditions through willingness to accept more reasonable wages, and there also has been liquidation of fuel and railroad freight rates. Such developments cannot well be effected over night and since the present steel prices discount what already has happened, the industry feels that if it is to do its part in keeping down unemployment it is entitled to the prices which now rule.

The principal reason buying is not more urgent and confident lies in the fact that in most products there is no doubt about deliveries. Possibly it is a little

harder now than it was recently to secure immediate shipment of sheets, but in all other lines manufacturers are keeping right up with their deliveries.

The pig iron market has had a very quiet week, but the situation in scrap iron and steel has been enlivened by what the steel manufacturers term a "dealers' boom," which has found expression in the payment by dealers of stiff advances over recent prices at primary points. Consumers are resisting strongly the attempt to wring higher prices out of them and it is worthy of note, as showing that the demand is not very strong, that a large Pittsburgh independent steel company last week rejected 25 cars of material because it was not up to specifications. There is very little change in the fuel situation.

Pig Iron.—It is doubtful whether this week's business will total more than 2000 tons. Recent purchases by the Standard Sanitary Mfg. Co. have removed that company as a possible buyer for a time, while the Westinghouse Electric & Mfg. Co., which recently asked for prices on about 1300 tons of foundry iron, is inclined to regard a price of \$21, furnace, for the base grade as too high. The business in foundry iron is of lots of one to two carloads, which, however, have been moved at a basis of \$21 for No. 2 plain. The largest sale reported of the steel making grades is one of 500 tons of standard Bessemer for prompt delivery, at \$20, Valley furnace. Almost no interest is being taken in basic iron at present and while most makers are refusing to consider offers of less than \$20, no sizable tonnages yet have sold at that price. W. P.

Snyder & Co. report the average price of basic iron from Valley furnace for September at \$19.25 and Bessemer at \$20, as compared with \$18.33 and \$20 respectively in August.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic	\$19.25 to \$20.00
Bessemer	20.00
Gray forge	20.00
No. 2 foundry	21.00
No. 3 foundry	20.50
Malleable	20.50

Ferroalloys.—The market is showing a little more life than was recently true, particularly in 50 per cent ferrosilicon, of which there has been one sale of 300 tons for shipment over the remainder of the year to a large foundry interest. The quotable market on this material, based on sales, is \$60, freight allowed, at which price several carloads for early delivery have been moved. Consumers are trying to break this price, but the effort so far has not been successful. An inquiry for 500 tons of 75 per cent ferrosilicon has reached this market, but the buyer and sellers are considerably apart on prices, the bid being around \$100 and the asking price around \$125, furnace, freight allowed. The most interesting feature of the market with reference to ferromanganese was a purchase recently made by a Youngstown district steel maker of 100 tons of 80 per cent foreign material at \$60, delivered. This price means only \$53.28 at seaboard and is a full \$5 per ton below the recent quotation. American makers still are quoting \$65 delivered east of the Mississippi River, but have shaded those quotations slightly in competition with foreign material. There is no interest in spiegeleisen and quotations are nominal. The recent advance of \$2 per ton in Bessemer ferrosilicon and silveries appears to be in sympathy with pig iron rather than because of any material increase in demand.

We quote 78 to 82 per cent domestic ferromanganese at \$60 to \$65 delivered; 78 to 82 per cent British ferromanganese, \$58.35, c.i.f. Atlantic seaboard; German, \$53.28 c.i.f. We quote average 20 per cent spiegeleisen at \$30 to \$32, delivered, Pittsburgh or Valleys; 50 per cent ferrosilicon, domestic, \$60, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, \$38.50; 11 per cent, \$41.80; 12 per cent, \$45.10; 13 per cent, \$49.10; 14 per cent, \$54.10; silvery iron, 6 per cent, \$27; 7 per cent, \$28; 8 per cent, \$29.50; 9 per cent, \$31.50; 10 per cent, \$33.50; 11 per cent, \$36; 12 per cent, \$38.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

Billets, Sheet Bars and Slabs.—Practically all makers of sheet bars have advanced their price to \$32, Pittsburgh or Youngstown, thus re-establishing the price named early in July. Such a step was necessary as a means of protecting the recent advance in sheets, for ability to buy bars at recent prices, which ranged as low as \$29, would have enabled non-integrated sheet makers to continue to take low-priced business. Demand at the new price is not heavy. Billets and slabs are neglected, but with sheet bars at \$32 the effort now is to get \$30 for 4-in. billets, \$31 for slabs and \$32 for small billets. Little demand exists for forging billets.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$30; 2 x 2-in. billets, \$32; Bessemer and open-hearth sheet bars, \$32; slabs, \$31; forging billets, ordinary carbons, \$35, all f.o.b. Youngstown or Pittsburgh mills.

Wire Rods.—Specifications against contracts placed at the old prices are coming along fairly well, but the new base of \$41, Pittsburgh, for No. 5 gage common soft rods to date has found almost no basis in sales. All makers are holding firmly to that price on new business, but new customers are few. Prices are given on page 904.

Plates.—Demand remains extremely limited, with the bulk of the sales of small lots against which common prices have been 1.65c. to 1.70c. The quotation of 1.75c. is merely an asking price and large users insist that if they had sizable orders to place they could do 1.60c. readily. Prices are given on page 904.

We quote sheared plates, ¼ in. and heavier, tank quality, at 1.60c. to 1.75c. f.o.b. Pittsburgh.

Structural Material.—Structural shapes are showing more activity than is noted in other tonnage products, but the total bookings are woefully short of taxing mill capacity. The attempt to stabilize the market at 1.75c. has not been successful and on actual business 1.60c. to 1.65c. covers the price range. Structural awards have

been fewer in most shops here. Steel for the airship hangar, Scott field, Belleville, Ill., amounting to 3800 tons, has been awarded to the McClintic-Marshall Co. This company also was the successful bidder for three public schools in Brooklyn, New York, taking 2400 tons; for a new building for the Berkshire Knitting Mills, Wyomissing, Pa., calling for 710 tons; for an apartment house for the 920 Fifth Avenue Corporation, New York, taking 830 tons; for a factory building for C. A. Reed & Co., Williamsport, Pa., taking 413 tons; for an apartment house at 34 East Fifty-first Street, New York, calling for 241 tons; for a hospital at Hackensack, N. J., requiring 650 tons, and for two cable way towers placed by the Lidgerwood Mfg. Co., New York, for export, taking 105 tons. The Jones & Laughlin Steel Co. has the contract for the addition to the plant of the Townsend Co., New Brighton, Pa., calling for 500 tons and the Memphis Steel Construction Co. will fabricate 400 tons for the plant of the E. Z. Opener Bag Co., New Orleans. The Dravo Contracting Co. recently was awarded a drill boat by the Government for use in the improvements of the Hell Gate channel. This boat has a 10-ft. center drill and 1200 tons of steel will be required for its construction. The same company also has taken three river barges for the Pittsburgh district U. S. Engineer's office, taking 400 tons of steel. Plain material prices are given on page 904.

Wire Products.—Makers here report good specifications against orders and contracts booked at the old basis of \$20.50 base per 100-lb. for wire and \$2.75 base per keg for bright nails, but all such requirements are accommodated readily and new business is falling short of making good the completed tonnages. The best business is in nails, but fence makers are specifying fairly against galvanized wire. Manufacturers find no trouble in keeping up with their deliveries and until they fall behind there is little likelihood of any further advance in prices.

We quote wire nails at \$2.90 base per keg, Pittsburgh, and bright basic and Bessemer wire at \$2.60 base per 100 lb., Pittsburgh.

Steel Rails.—Not much demand exists in either standard or light rails. There is a fair movement of the former on old orders, but it is doubtful whether the railroads will take all the tonnage they placed earlier in the year because it is getting late for laying rails and most of the Eastern lines put off the work last spring waiting on a reduction in the wage scales. Light rails do not reflect either the larger coal mine operations or the fact that contractors are busier now than they were earlier in the year. The regular quotation on light sections rolled from billets is 1.75c. base, but it is noted that a price of 1.70c. failed to bring an order, due to competition from re-rolled rails which are quoted from \$36 per gross ton mill to \$36 delivered.

Spikes and Track Bolts.—Demand for spikes still is of moderate proportions. Both the railroads and jobbers are buying as supplies are needed because there is no question at the moment about deliveries. Not only can makers make prompt shipments, but they are anxious for business and prices are soft. Activity also is lacking in track bolts, demand for which is entirely for small lots. Quotations merely are asking prices and probably would be shaded against really attractive orders. Makers here are trying to obtain the usual extra of 1c. per lb. on less than carloads of a size. Prices are given on page 904.

Hot-Rolled and Cold-Rolled Strips.—Demands are slightly more numerous, but efforts to get prices up are not particularly successful. The market is quotable from 2c. to 2.25c. base for hot-rolled strips and 3.75c. to 4c. base on cold-rolled.

Iron and Steel Bars.—There is no perceptible increase in the demand for merchant bars upon Pittsburgh and Youngstown makers, and actual prices still are somewhat indefinite. The common asking price is 1.65c., but orders have been accepted at 1.60c., and suggestions have been made by buyers that even less could be done on attractive tonnages. There is not much inquiry for reinforcing bars and recent improve-

ment in the demand for iron bars has not been maintained. The common quotation on the latter is 2.25c. base, but some business has been taken at 2.15c.

We quote steel bars rolled from billets at 1.60c. to 1.65c.; reinforcing bars, rolled from billets, 1.60c. to 1.65c. base; reinforcing bars, rolled from old rails, 1.60c.; refined iron bars, 2.15c. to 2.25c. in carloads, f.o.b. mill, Pittsburgh.

Steel Skelp.—The higher prices now quoted on plates have caused some strengthening in quotations on skelp. Some makers now are asking 1.75c., Pittsburgh, for the latter, but, as is true of plates, 1.60c. to 1.65c. is more representative of to-day's possibilities. There is little call for skelp despite a better movement in tubular goods.

Iron and Steel Pipe.—The upward slant of orders, which began about the middle of July, continues, most makers reporting September business to have registered a fair gain over August, which in turn was better than July in the matter of bookings. Despite the gains, there remains considerable room for improvement in both steel and wrought iron pipe, none of the makers being sold very far ahead. Line pipe constitutes the most active spot, but competition for passing business is so sharp that the price advantage is entirely with buyers. The Ohio Fuel Supply Co. recently closed for 28 miles of 4-in. line pipe and 6 miles of 6-in. pipe.

Sheets.—The higher prices recently established are beginning to find some basis in sales, although as yet only small tonnages are involved. The total amount of business driven in before the advance is understood to have been more than 250,000 tons, and as it practically all was for early shipment, mill operations have further expanded. The American Sheet & Tin Plate Co. has all of its sheet plants in operation this week but as some of them are not running full, the active units fall just short of 90 per cent of the total number of mills embraced by this company.

Tin Plate.—Although the demand for perishable food container tin plate has practically disappeared, there continues to be sufficient demand for general line plate to sustain the recent high rate of mill operations. The American Sheet & Tin Plate Co. again this week has 65 per cent of its mills running, while the independent plants are even more fully engaged. Weirton Steel Co. has 43 of its 50 tin plate mills running while the Jones & Laughlin Steel Co., which recently was running 16 of its 32 mills, now has 20 of them on and the Standard Tin Plate Co. has put on four additional hot mills, and has 16 of its 24 mills engaged. The McKeesport Tin Plate Co. has all of its 44 mills running. Production plate is well established at \$5.25 per base box, Pittsburgh, on domestic business, but stock items, although not plenty, are slightly weaker, having sold around \$4.50 recently. The full range on the latter is \$4.50 to \$4.75.

Cold-Finished Steel Bars and Shafting.—This line has not shared in the general improvement in the steel business. Most makers are carrying rather sizable stocks and in an effort to liquidate them, quotations as low as 2.20c. and 2.25c. have been made. These prices rule, however, only in such business as can be supplied from stock and represent a writing down of inventories. Against new rollings 2.40c. is the common quotation, and it is doubtful whether the price would be shaded except on very attractive orders.

Hoops and Bands.—The effort to establish a base of 2.25c. for these products does not seem to be meeting much success, owing to the fact that the demand still is limited. Several makers, however, will not accept business in the lighter gages of narrow material at less, but difficulty is experienced in getting more than 2c. on the heavier gages.

Nuts, Bolts and Rivets.—A revision of prices, which has been generally adopted, puts rivets at a flat base of \$2.40 for large button head and \$2.50 for cone head, which is slightly above recent low prices but somewhat below what some makers have been asking. The new discount on small rivets is 70, 10 and 5 per cent off list, against the former discount of 70, 10 and 10 per cent. An average advance of 5 per cent has been made in machine, carriage and lag bolts, but nuts have been cut \$3 to \$5 per ton by an increase in the discount.

Inquiries are more numerous but actual business still leaves much to be desired. Prices and discounts are given on page 904.

Coke and Coal.—The placing of a few fair-sized contracts for shipment over the remainder of the year has not appreciably disturbed the market for furnace coke, which still is quotable at from \$3.25 to \$3.50 per net ton oven. The Empire Steel & Iron Co., Catsauqua, Pa., recently closed for 7000 tons a month for the remainder of the year at about \$3.25, and the Adrian Furnace Co., DuBois, Pa., has contracted for 20,000 tons for shipment over three months at slightly above this figure. The Colonial Iron Co., Riddlesburg, Pa., and the Thomas Iron Co., Hokendauqua, Pa., have inquiries out for about 7000 tons a month. Spot demands for furnace fuel are few and small, and not much trouble is experienced by buyers in covering them at \$3.25, oven. Foundry coke finds a steady demand at prices ranging anywhere from \$4.25 to \$4.75 per net ton oven. The coal market is quiet, with prices showing no special change from those of a week ago or \$1.75 to \$1.85 for mine run steam, \$1.90 to \$2.10 on by-product and \$3.25 to \$3.50 on gas coal.

Old Material.—Prices still are headed upward, but the advance is due more to what is called a "dealers' boom" than to a really big demand from melters. The latter, in this district at least, are resisting strongly the attempts by dealers to obtain higher prices, but are obliged to pay some advance to secure needed supplies. But they are buying sparingly and thus far it has been impossible to put prices up as much or as rapidly as they have gone up in primary markets. Dodge Bros. scrap, which was sold recently, brought \$5.60 Detroit for turnings and \$7.30 for borings, which would mean \$10.50, and \$12.20, respectively, delivered to Pittsburgh common freight points, or about \$1 a ton above the highest bids recently made by consumers in this district. Correspondingly high prices were paid for other kinds of scrap offered by Dodge Bros. Malleable sold at \$12.40, Detroit; compressed sheets, \$8.20; busheling, \$7; shoveling steel, \$10.50, and low phosphorous steel, \$11.50. Dealers have paid \$13.50 a net ton, or \$15.12 a gross ton for heavy melting steel offered by the Pennsylvania Railroad, Central Region, which compares with \$14.50, the highest bid of any of the Pittsburgh district steel makers. Compressed sheets, offered by Westinghouse Electric & Mfg. Co., were taken by dealers at \$11.25, East Pittsburgh, or at least 50c. a ton above what they could be sold at to mills to-day. Either the dealers have become frightened by the recent improvement in the steel business and are covering against short sales, or are bidding up prices in the hope of establishing levels which will enable them to unload profitably the large stocks of high-costing material they have on their yards. The Pennsylvania Railroad, Eastern Region, closed bids at noon to-day on 25,000 net tons of scrap. The list includes 12,000 of No. 1 rails, which compares with 16,500 tons of this grade offered in the September list.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh.....	\$14.00 to \$14.50
No. 1 cast cupola size.....	17.50 to 18.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Parkersburg and Huntington, W. Va., and Franklin, Pa.....	15.50 to 16.00
Compressed sheet steel.....	11.50 to 12.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist....	10.00 to 10.50
Railroad knuckles and couplers.....	15.00 to 15.25
Railroad coil and leaf springs.....	15.00 to 15.25
Railroad grate bars.....	11.00 to 11.50
Low phosphorus melting stock, bloom and billet ends, heavy plates, ½-in. and thicker.....	17.50 to 18.00
Railroad malleable.....	13.00 to 13.50
Iron car axles.....	20.00 to 21.00
Locomotive axles, steel.....	19.50 to 20.00
Steel car axles.....	15.00 to 15.50
Cast iron wheels.....	14.50 to 17.00
Rolled steel wheels.....	14.50 to 15.00
Machine shop turnings.....	9.00 to 9.50
Sheet bar crop ends at origin.....	13.00 to 13.50
Heavy steel axle turnings.....	10.50 to 11.00
Short shoveling turnings.....	10.50 to 11.00
Heavy breakable cast.....	15.00 to 15.50
Stove plate.....	12.00 to 12.50
Cast iron borings.....	9.50 to 10.00
No. 1 railroad wrought.....	12.00 to 12.50

Chicago

CHICAGO, Oct. 4.

The betterment in demand for steel is sustained but the price situation has not yet been materially affected. Although reports from Eastern markets seem to indicate that plates, structural steel and bars are firmer there, the same cannot be said in the Chicago district. The expansion in business during the past two weeks has not yet reached sufficient proportions to give the mills comfortable backlogs, but it is apparent that the tendency is in the right direction. While buying is more liberal than it has been for months, it is evident that caution still controls the purchasing policy of many consumers and that there are still those who feel that railroad freight reductions and further wage cuts must come before the industry will reach a stable basis. On the other hand, it is contended by some observers that present mill prices are considerably below costs and discount the very developments counted on to bring prices to bottom. It is not thought likely that reductions, if made, will bring rates back to the 1914 status, as it is generally conceded that railroad earnings were too low at that time. If, therefore, it be agreed that the element of transportation costs in the manufacture of steel will settle at a point somewhat higher than the pre-war level, present going prices for mill products cannot be far from bottom, barring the introduction of unforeseen operating economies.

Ignoring speculation as to future developments in the market, it cannot be denied that considerable work is going ahead which cannot be delayed. Railroad lettings of car repairs as well as of new equipment are steadily becoming more numerous. Oil storage tank construction and fabricating work are also calling for increasing quantities of steel and miscellaneous demand is better.

Mill operations in this district have shown a further increase. The Illinois Steel Co. is on a 39 per cent basis, while the Inland Steel Co. is producing at the rate of 40 per cent of ingot capacity. The former company has added another furnace at South Works, making a total of 10 active stacks out of its 29.

Ferroalloys.—A local melter has purchased a carload of 50 per cent ferrosilicon at less than \$60, delivered. An inquiry for 750 tons of 14 to 15 per cent ferrosilicon is in the market and it is reported that as low as \$32, delivered, has been quoted. Two other inquiries for the same material, amounting to 100 tons each, are pending.

We quote 78 to 82 per cent ferromanganese, \$66.75, delivered; 50 per cent ferrosilicon, \$60, delivered; spiegel-eisen, 18 to 22 per cent, \$36 to \$37, delivered.

Pig Iron.—The market is quiet, but producers report that they are in a fairly comfortable position as a result of bookings accumulated during September and the latter part of August. Shipments of by-product coke during September indicate that local melters are operating at about 73 per cent of normal, while those at outlying points are on a 30 per cent basis. Foundry operations, however, are still spotty, and while there has been an appreciable improvement, it has not been of the sustained character necessary to restore the confidence of buyers. It is to be noted, however, that some melters are commencing to lay up a little stock of both coke and iron. So far as local producers are concerned, pig iron prices remain unchanged, but certain tonnages bought on speculation have been unloaded recently at a concession of \$1 a ton. Sales of foundry and malleable aggregating close to 1500 tons have been made within the past week on this basis. The amount of this iron still outstanding is not great, however, and when it is disposed of prices are expected to recover their former firmness. A railroad is in the market for 750 tons of malleable and 200 tons of foundry. A Minnesota melter is inquiring for 100 tons of foundry and several fair-sized inquiries for charcoal have been received from the East. There is also an inquiry for 100 tons of charcoal pending for local delivery. Several sales of from 100 to 200 tons for Eastern delivery have been closed at the new base of \$28, furnace. Jackson County silvery appears to be holding at the advanced quotations, but Tennessee material is available at lower prices. Low phosphorus is being offered at \$38.50, delivered, or about

\$32, Eastern furnace. The Mark blast furnace at Indiana Harbor is now warming up and will be blown in within a few days. It will be employed partly on steel-making iron for the Mark Mfg. Co., and partly on merchant iron for the leading Northern merchant.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil.	
1.50, delivered at Chicago.....	\$31.50
Northern coke, No. 1, sil. 2.25 to 2.75.....	\$21.50 to 22.50
Northern coke, foundry, No. 2, sil.	
1.75 to 2.25	21.00 to 22.00
Northern high phos.....	22.00
Southern foundry, sil. 1.75 to 2.25.....	25.67
Malleable, not over 2.25 sil.....	21.00 to 22.00
Basic	22.00
Low phos., Eastern furnace, sil. 1 to 2	
per cent copper free.....	32.00
Silvery, sil. 8 per cent.....	33.53 to 34.82

Railroad Equipment.—The Chicago, Milwaukee & St. Paul is in the market for 1000 50-ton composite general service cars and 2000 40-ton dumping stock cars. It is also asking for prices on 1000 steel underframes to be applied on cars which it will repair in its own shops. The same road has let repairs on 300 50-ton composite gondola cars to the Bettendorf Co. The Baltimore & Ohio has distributed its orders for car bodies as follows: Five hundred hopper car bodies to the Cambria Steel Co., 500 hopper and 500 box car bodies to the Standard Steel Car Co. and 500 box car bodies to the American Car & Foundry Co. The New York Central Lines, which let orders for a large number of car repairs a week ago, contemplate the award of repairs on another large lot of cars.

Structural Material.—The apparent settlement of the local building strike is accepted with caution, as the unions have previously shown their lack of good faith. If it becomes clear, however, that stable conditions are actually at hand, it is likely that considerable work will be released despite the lateness of the season. In other sections of the West, a steady expansion of construction activity is to be noted with the result that mills are getting more business from both the fabricators and the jobbers. Plain material prices have not changed materially, but the tendency, if any, is upward. The largest pending fabricating job, the Government hangar, Belleville, Ill., involving 3600 tons was finally award to the McClintic-Marshall Co. at a reported price of \$65, delivered. Other recent lettings include:

Masonic Temple, Davenport, Iowa, 443 tons, to Decatur Bridge Co.

Pressure tank, Los Angeles, 358 tons, to Baker Iron Works.

Buffalo Marine Construction Co., dry dock, Buffalo, 1200 tons, to Lackawanna Bridge Co.

Masonic Temple, Sioux City, Iowa, 337 tons, to Rock Island Bridge & Iron Works.

Colorado & Southern Railway, two oil storage tanks, Wichita Falls, Tex., 312 tons, to Chicago Bridge & Iron Co.

Waterway Paper Products Co. plant, Chicago, 177 tons, to Federal Bridge & Structural Co.

F. Rosenberg Elevator Co. plant, Milwaukee, 125 tons, to Federal Bridge & Structural Co.

Memorial building and auditorium, Wakefield, Mich., 175 tons, to Worden-Allen Co.

Wisconsin Valley Electric Co., Wausau, Wis., transmission towers, 100 tons, to Federal Bridge & Structural Co.

Bahai Temple, Wilmette, Ill., 105 tons, to Federal Bridge & Structural Co.

Pending business includes:

Government, LeClaire canal locks, Rock Island, 150 tons, Penn Bridge Co. low bidder.

Gallup-American Coal Co., Gallup, N. M., power house, 325 tons.

Harris Theatre, Indianapolis, 150 tons.

Trestle, Wisconsin Steel Works, Chicago, estimates not yet asked.

The mill quotation on plain material ranges from 1.75c. to 1.85c., Chicago. Jobbers quote 2.88c. for materials out of warehouse.

Rails and Track Supplies.—Orders for spikes and bolts are more numerous, but prices are no firmer. On the contrary, as low as 2.25c., Pittsburgh, has been done in a few instances on standard spikes. No large purchases are reported, most orders ranging from 500 to 1000 kegs. Little new business in tie plates is devel-

oping, but specifications are being taken out fairly well. There is little demand for light rails.

Standard Bessemer rails, \$45; open-hearth rails, \$47; light rails rolled from new steel, 1.75c. f.o.b. makers' mills. Standard railroad spikes, 2.40c., Pittsburgh; track bolts with square nuts, 3.40c., Pittsburgh; tie plates, steel and iron, 2c., f.o.b. makers' mills.

Plates.—The improvement in demand noted a week ago has been sustained. Good-sized orders continue to come from jobbers, tank fabricators and car builders, with the result that many who feared that the recent revival in trade was a mere flash in the pan, now look forward confidently to a steady, although perhaps gradual, betterment in buying. It is conceded that the change in sentiment is more marked than the change in actual conditions. Plates are still the weakest commodity in the finished steel market and there has been no material change in going prices, but the tendency appears to be in the direction of greater firmness. Some of the steel for the car repairs recently let by the New York Central Lines has been placed with a local mill, one order calling for 1000 tons of plates, shapes and bars and another for 1250 tons. An inquiry for 2500 tons is still pending. Fabricators of oil storage tanks are also active in the market, a southwestern builder having bought 2000 tons of plates from a local mill within the past few days.

The ruling mill quotations range from 1.65c. to 1.80c., Chicago. Jobbers quote 2.88c. for plates out of stock.

Bolts and Nuts.—Demand is still unsatisfactory, but owing to the losses incurred taking business in the face of sharp competition, makers are taking a firmer attitude. One important bolt manufacturer has announced a new list of minimum discounts and these are being adopted by most other makers:

Carriage bolts, small rolled thread, 65 and 10 and 10 off; cut thread, 65 and 10; larger and longer, 65 and 10; machine bolts, small, rolled thread, 70 and 10 and 5; cut thread, 70 and 5; larger, 65 and 10 and 5; machine bolts, cold punched, chamfered and trimmed, small, 65 and 5; larger, 65; lag bolts, 70 and 10; hot pressed nuts, blank, \$5.50 off; tapped, \$5 off; cold punched nuts, blank, \$5.25 off; tapped, \$5 off; small rivets, 70 and 10 and 5 off; large structural rivets, \$2.40 base; large boiler rivets, \$2.50 base.

Discounts announced on stove bolts, plow bolts and semi-finished hexagon nuts are substantially the same as those published last week under finished iron and steel, f.o.b. Pittsburgh, page 844. That the above discounts have not yet been adopted by all makers is indicated by the fact that on an attractive local inquiry, now pending, the following were quoted, f.o.b. Chicago:

Small machine bolts, rolled thread, 70 and 10 and 10 and 5 off; cut thread and large, 70 and 10 and 5 off; carriage bolts, small, rolled thread, 65 and 10 and 10 and 5 off; cut thread and large, 65 and 10 and 5 off; lag bolts, 70 and 10 and 7½ off.

Jobbers quote structural rivets, 3.68c.; boiler rivets, 3.78c.; machine bolts up to ¾ x 4 in., 60 per cent off; larger sizes, 55 off; carriage bolts up to ¾ x 6 in., 55 off; larger sizes, 50 and 5 off; hot pressed nuts, square and hexagon tapped, \$3 off; blank nuts, \$3.25 off; coach or lag screws, gimlet points, square heads, 60 per cent off. Quantity extras are unchanged.

Sheets.—Business has fallen off since the advance, but in some cases this is due to the fact that mills having heavy bookings ahead cannot make the delivery asked for. The new prices on black and galvanized are holding rather steadily, but blue annealed is still available at from 2.25c. to 2.35c. base, Pittsburgh.

Mill quotations are 3c. for No. 28 black, 2.25c. to 2.50c. for No. 10 blue annealed and 4c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stocks, No. 10 blue annealed, 3.38c.; No. 28 black, 4.15c.; No. 28 galvanized, 5.15c. Hoops and bands, 3.48c.

Cast Iron Pipe.—The unemployment conference called by the President is expected to result in a further expansion of public works with a favorable effect on the cast iron pipe market. Despite the lateness of the season, actual inquiries now before the trade call for considerable tonnage. The only change to be noted in the price situation is the disappearance of the extreme concessions reported some weeks ago and a concomitant tendency toward stability.

Recent lettings include:

Cleveland, 1800 tons of 48- and 60-in., to United States Cast Iron Pipe & Foundry Co.

Cuyahoga County, Ohio, 1700 tons of 6- to 12-in., sublet

by contractor to United States Cast Iron Pipe & Foundry Co. Minneapolis, 200 tons, to National Cast Iron Pipe Co.

Prospective business:

Board of Local Improvements, Chicago, 713 tons of 8-in., to be sublet by contractor.

Marietta, Ohio, 375 tons of 12-in., bids to be taken Oct. 10.

Cincinnati, 250 tons, Oct. 5.

East Youngstown, Ohio, 250 tons, Oct. 11.

Bay View, park sewage pumping station, Toledo, Ohio, 65 tons of flanged 36-in. and specials, Oct. 3.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$45.60 to \$47.10; 6-in. and above, \$42.60 to \$44.10; class A and gas pipe, \$3 extra.

Wire Products.—The increase in demand has been sustained and further improvement is noted, particularly in the South, where there has been a marked change for the better. Jobbers are the most prominent buyers and the railroads are steadily increasing their purchases, although their individual orders are rarely more than a carload. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 904.

We quote warehouse prices f.o.b. Chicago: No. 9 and heavier black annealed wire, \$3.48 per 100 lb.; No. 9 and heavier bright basic wire, \$3.63 per 100 lb.; common wire nails, \$3.63 per 100 lb.; cement coated nails, \$3.05 per keg.

Bars.—Mills report better booking in soft steel bars, both specifications and new tonnage being heavier. Demand is widely distributed, coming from jobbers, forge shops, automobile manufacturers, bolt makers, and other users. A fair amount of business has been done in reinforcing bars, although prospective concrete jobs still greatly outnumber actual lettings. The Paul J. Kalman Co. has booked 150 tons for the Bahai Temple, Wilmette. Among pending projects are a home economics building at Purdue University, 75 tons, and an armory, Danville, Ill., 65 tons.

Mill prices are: Mild steel bars, 1.75c. to 1.85c., Chicago; common bar iron, 1.75c., Chicago; rail carbon, 1.75c., mill or Chicago.

Jobbers quote 2.78c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars is 4.20c. for rounds and 4.50c. for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.53c. base.

Old Material.—A number of substantial purchases by users have been made at advanced quotations. A large steel melter has bought several thousand tons of couplers, knuckles, springs, steel wheels and guard rails for a local and a St. Louis district plant and another important interest has bought a fair tonnage of malleable. There have also been moderate purchases of material by two iron mills in this district. Advances of from 25c. to \$1 a ton are to be noted on most of the items listed below. Railroad lists are more numerous. The Chicago & Northwestern offers 4000 tons, the Pennsylvania, Northwestern region, 2500 tons, the Pennsylvania, Southwestern Region, 3000 tons, and the Erie, the New York Central and the Michigan Central blank lists.

We quote delivery in consumers' yards Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	\$16.00 to \$16.50
Relaying rails	27.50 to 30.00
Car wheels	16.00 to 16.50
Steel rails, rerolling	14.00 to 14.50
Steel rails, less than 3 ft.	13.50 to 14.00
Heavy melting steel	12.25 to 12.75
Frogs, switches and guards cut apart	12.25 to 12.75
Shoveling steel	11.75 to 12.25
Low phos., heavy melting steel	14.25 to 14.75
Drop forge flashings	7.00 to 7.50
Hydraulic compressed sheet	8.00 to 8.50
Axle turnings	8.50 to 9.00

Per Net Ton

Iron angles and splice bars	14.00 to 14.50
Steel angle bars	11.50 to 12.00
Iron arch bars and transoms	15.00 to 15.50
Iron car axles	19.00 to 19.50
Steel car axles	14.00 to 14.50
No. 1 busheling	9.50 to 10.00
No. 2 busheling	6.75 to 7.25
Cut forge	11.00 to 11.50
Pipes and flues	8.00 to 8.50
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	11.25 to 11.75
Steel knuckles and couplers	13.00 to 13.50
Coil springs	14.00 to 14.50
No. 1 machinery cast	13.50 to 14.00
No. 1 railroad cast	13.25 to 13.75
Low phos. punchings	11.50 to 12.00
Locomotive tires, smooth	11.00 to 11.50
Machine shop turnings	3.50 to 4.00
Cast borings	5.50 to 6.00
Stove plate	12.75 to 13.25
Grate bars	11.50 to 12.00
Brake shoes	11.50 to 12.00
Railroad malleable	13.50 to 14.00
Agricultural malleable	13.50 to 14.00
Country mixed	9.00 to 9.50

New York

NEW YORK, Oct. 1.

Pig Iron.—The Westfield, Mass., machinery company, which had been in the market for 10,000 tons of No. 2 plain for several weeks, has contracted for its full requirements, dividing the iron among several companies. A Bridgeport company, which was in the market for 700 tons of foundry iron and 200 tons of malleable, has bought resale iron, but it is not believed that there is much resale iron now to be had. The New York Central has closed for 500 tons and several other buyers have bought small tonnages. A machinery company is expected to be in the market in two or three weeks for 500 tons and a New Jersey melter is expected to close for 500 tons before the close of the week. The usual quotation on eastern Pennsylvania iron is \$20.50, furnace, for No. 2 plain, \$21 for No. 2X and \$22 for No. 1. One Pennsylvania furnace which expected to blow out Oct. 1 has taken on considerable business of late and has decided to remain in blast. Reports from foundries connected with textile and hardware concerns indicate improvement in business, but the general jobbing trade is not very active.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25..	\$24.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.52
East. Pa. No. 2 fdy., sil. 1.75 to 2.25..	23.02
Buffalo, sil. 1.75 to 2.25.....	25.46
No. 2 Virginia, sil. 1.75 to 2.25.....	29.16

Ferroalloys.—Demand for ferromanganese is very light, and quotations for the American and British alloy are unchanged. A Youngstown consumer is reported to have bought 100 tons of German ferromanganese at \$60, delivered, or an equivalent of around \$53, seaboard, but any confirmation of this report is not obtainable. It is, however, a fact that one seller of German ferromanganese is able to quote about \$53, seaboard. Inquiries are confined to a few carload lots. There have been sales of a few carloads of spiegeleisen at \$26, furnace, but otherwise the market is very quiet. There is no demand for manganese ore, quotations for which continue nominal. There is no activity in the 50 per cent ferrosilicon market, but it is reported that about 2000 tons of resale material is offered, this being material contracted for but never delivered. Quotations are as follows:

Ferroalloys	
Ferromanganese, domestic, delivered, per ton,	\$60.00 to \$63.00
Ferromanganese, British, seaboard, per ton.	\$58.35
Spiegeleisen, 20 per cent, furnace, per ton	\$25.00 to \$26.00
Ferrosilicon, 50 per cent, delivered, per ton,	\$60.00 to \$65.00
Ferrotungsten, per lb. of contained metal.	48c. to 58c.
Ferrochromium, 6 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr.....	14c.
Ferrovandium, per lb. of contained vanadium	\$4.50
Ores	
Manganese ore, foreign, per unit, seaboard.	20c.
Tungsten ore, per unit, in 60 per cent concentrates	\$3.00 up
Chrome ore, 40 to 45 per cent Cr ₂ O ₃ , crude per net ton, Atlantic seaboard.....	\$20.00 to \$25.00
Chrome ore, 45 to 50 per cent Cr ₂ O ₃ , crude per net ton, Atlantic seaboard.....	\$30.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS ₃ , New York.....	55c. to 60c.

Finished Iron and Steel.—Outside of fabricated steel work, business could hardly be called active. About 6000 tons of steel has been closed for sizable building and bridge projects and nearly 7000 tons of new work has come into the market. The other noteworthy item is an expansion in railroad car inquiries and a sustained buying by the railroads of day to day needs. For example, one road has bought 700 tires and 400 wheels. The Baltimore & Ohio has placed 500 hopper car bodies with the Cambria Steel Co. and a like number with the Standard Steel Car Co., 500 box car bodies with the Standard Steel Car Co. and a like number with the American Car & Foundry Co., and is inquiring for 1000 70-ton coke car bodies and 1000 50-ton gondolas. The Erie is inquiring for repairs for 250 drop and

gondola cars. In new car work the St. Paul is in the market for 2500 general service cars, the Rio Grande & Western for 1000 general service cars, and the Lackawanna Railroad plans to buy 1000, and perhaps 2000, 50-ton hopper cars, but claims prices named are too high, largely through the prices of the specialties. The Great Northern is in the market for 30 underframes for dining cars. Among new fabricated steel jobs, an additional roadway for the Manhattan bridge, involving 3000 tons, on which bids are to be received Oct. 10, is conspicuous. Other inquiries include the following: 300 tons for the Back Bay telephone exchange, Boston; 550 tons for the Philadelphia & Reading bridge at Atlantic City; 1000 tons for a high school at Providence; 1000 tons for a high school at Springfield, Mass., and 700 tons for the Harris-Forbes Building. Awards include the following: 150 tons for the Surf apartment, Rochester, N. Y., and 300 tons for a sintering plant for the Chateaugay Ore & Iron Co., Lyon Mountain, N. Y., both to the Lackawanna Bridge Co.; 200 tons for a boiler house for the Cherry River Paper Co., W. Va., and 900 tons for a chemical laboratory, Yale University, both to the American Bridge Co.; 1300 tons for the Golden apartment, Ninetieth Street and Broadway, to the Hinkle Iron Co.; 1100 tons for the National Surety Co. to the Levering & Carrigues Co.; 700 tons for a Paterno apartment to the Paterson Bridge Co.; 400 tons for C. A. Reed & Co., Williamsport, Pa., to the McClintic-Marshall Co., which company is expected to erect the Hackensack hospital, taking 700 tons. It is reported that the Russell Wheel & Foundry Co. will erect the 8000-ton structure for the Masonic Temple, Detroit. No decision has apparently been made on 1900 tons of bars and plates, mostly plates, for the General Petroleum Co. Low prices have been named on 700 tons of reinforcing bars for the concrete portion of a boardwalk at Coney Island, for which the Phoenix Construction Co. has the general contract. As to prices, the minimum appears to be 1.60c., Pittsburgh base, for the heavy rolled products—shapes, bars and plates—though on a firm attractive offering this price might still be shaded. The effect of the advances in pipe and sheets has, like that in wire products, been followed by cessation of buying after those protected by the lower prices were covered.

We quote for mill shipments, New York, as follows: Soft steel bars, 1.98c. to 2.03c.; plates, 1.98c. to 2.13c.; structural shapes, 1.98c. to 2.13c.; bar iron, 1.98c. to 2.03c. On export shipments the freight rate is now 28.5c. per 100 lb., instead of 38c., the domestic rate.

Warehouse Business.—Practically all warehouses report a far better month's business for September than for several months past. Although there is a better tone to the market, prices are still unchanged, most quotations being largely nominal. Prices of black and galvanized sheets continue stiff with few sales reported under the current quotation of 4c. per lb. for black and 5c. per lb. for galvanized. In the brass and copper market, prices are stiff and business fair but still confined to numerous small orders that are not always profitable to handle.

High Speed Steel.—Market conditions are unchanged, purchases continuing fairly numerous but small. Producers quote 90c. to \$1 per lb. for 18 per cent tungsten high speed steel.

Cast-Iron Pipe.—No municipal contracts are now pending but small orders are sufficiently abundant to have a strengthening effect on prices, particularly quotations on the smaller sizes. We quote per net ton, f.o.b. New York, carload lots, as follows: 6-in. and larger, \$47.30; 4-in. and 5-in., \$52.30; 3-in., \$62.30, with \$4 additional for Class A and gas pipe.

Old Material.—The market continues to show activity, particularly in the Pittsburgh and Valley districts, where as high as \$14.50 per ton has been done on heavy melting steel, according to one dealer. While heavy melting steel quotations continue unchanged for the present, some items have registered a slight advance and there is noticeable a general stiffening in the market. The weekly buying prices of a broker with an office in this district have been increased this

week from 25c. and 50c. per ton to as high as \$1 and \$1.50 per ton.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard.....	\$7.00 to \$7.50
Steel rails, short lengths, or equivalent	8.50 to 9.00
Rerolling rails	11.50 to 12.00
Relaying rails, nominal.....	37.50 to 40.00
Steel car axles	11.50 to 12.00
Iron car axles	19.00 to 20.00
No. 1 railroad wrought	12.00 to 12.50
Wrought iron track	9.50 to 10.00
Forge fire	6.00 to 6.50
No. 1 yard wrought, long.....	10.50 to 11.00
Light iron	4.50 to 5.00
Cast borings (clean).....	5.50 to 6.00
Machine-shop turnings	4.00 to 4.50
Mixed borings and turnings	3.50 to 4.00
Iron and steel pipe (1 in. diam. not under 2 ft. long).....	9.00 to 9.50
Stove plate	10.00 to 10.50
Locomotive grate bars	10.00 to 10.50
Malleable cast (railroad)	8.50 to 9.00
Car wheels	12.00 to 12.50

Prices which dealers in New York and Brooklyn are quoted to local foundries, per gross ton, follow:

No. 1 machinery cast.....	\$17.00 to \$18.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	15.00 to 16.00
No. 1 heavy cast, not cupola size.....	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	10.00 to 10.50

Cleveland

Cleveland, Oct. 4.

Iron Ore.—Ore shipments fell off during September, the lake movement during that month being 3,913,122 gross tons as compared with 4,329,158 tons during August. The total movement to Oct. 1 was 18,661,194 tons as compared with 44,273,356 tons during the same period last year. Shipments are expected to taper off during the next two weeks and some of the ore firms plan to be about through with their shipments by Oct. 15, and others by Nov. 1. While a little ore will probably be moved during November, the shipping season will be practically over by Nov. 1, or a month earlier than usual. Late inquiries for ore have not resulted in sales and no more sales are expected this season except possibly small lots of special grades for mixtures. Two recent inquiries from southern Ohio for ore for making foundry iron did not result in sales. One furnace, after being offered no ore at below regular prices, withdrew its inquiry, deciding that there would be no profit in making foundry pig iron at prevailing prices unless it could buy cheaper ore. Lake Superior ore on hand at furnaces and Lake Erie docks Sept. 1 amounted to approximately 35,500,000 tons as compared with approximately 32,000,000 tons on the same date a year ago. Dock and furnace yard stocks were about 3,000,000 tons larger on Sept. 1 than on Aug. 1. Furnace stocks on Sept. 1 amounted to approximately 26,200,000 tons. Improved furnace operations in August were reflected in a slight gain in the consumption of lake ore. The amount consumed during August was approximately 1,322,000 tons as compared with 1,195,000 during July.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, \$6.45; Old range non-Bessemer, 51½ per cent iron, \$5.70; Mesabi Bessemer, 55 per cent iron, \$6.20; Mesabi non-Bessemer, 51½ per cent iron, \$5.55.

Pig Iron.—Sales of foundry iron are still being made in fairly good volume and October is expected to show an increase over September in both sales and shipments. Sales by local interests during the week aggregated approximately 12,000 tons, including two or three 1000-ton lots. Outside of a few small lots of malleable iron, all the business booked was in foundry grades. One local interest reports an increase of 100 per cent in sales during September over August, another a gain of 33 per cent and another a gain of 10 per cent. September shipments showed an increase of from 30 to 40 per cent over the previous month. Sales during the week included 800 tons placed by a Pittsburgh district sanitary interest with a Valley furnace and 700 tons purchased by a Cleveland jobbing foundry. The market is firm at recent price levels and some producers who are below \$21 on foundry iron seem inclined to stiffen up a little on prices. However, \$20 is still

quoted for this grade by lake furnaces, although some sales are being made at 50c. to \$1 a ton higher. One Cleveland producer is now asking \$21 for outside shipment to points having the same freight rate as from the Valley or a lower rate. For Cleveland delivery several sales are reported on the basis of \$20.50 to \$21. A 400-ton lot for Eastern shipment from a New York furnace was sold on the basis of \$20.25, Buffalo. No sales are being made for delivery beyond Jan. 1. Inquiries pending include one for 1200 tons from an Ohio manufacturer of heating equipment. The only basic inquiry during the week was from a West Virginia melter for 3000 tons.

Quotations below are f.o.b. local furnace for northern foundry iron, not including a 56c. switching charge. Other quotations are delivered Cleveland, being based on a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and a \$6.67 rate from Birmingham:

Basic	\$21.21
Northern No. 2 fdy., sil. 1.75 to 2.25.....	\$20.50 to 21.00
Southern fdy., sil. 2.25 to 2.75.....	26.17
Ohio silvery, sil. 3 per cent.....	30.86
Standard low phos., Valley furnace.....	35.00

Semi-Finished Steel.—Several mills are holding to the recent advance of \$2 a ton to \$32 for sheet bars and while no sales are reported at the advance, it is understood that one inquiry for 2000 tons and another for 3000 tons have failed to bring out a lower quotation.

Finished Iron and Steel.—The demand for finished iron and steel shows an improvement in orders from widely diversified industries. The price situation shows no appreciable change. Some independent mills are adhering to 1.65c. for steel bars and 1.75c. for plates and structural material, which the Carnegie Steel Co. announced last week as its minimum prices, but two or more independent mills are still naming 1.60c. for steel bars and 1.65c. for plate and structural material. However, there are intimations that the lower prices may be withdrawn. Hard steel reinforcing bars are weak, sales being made at 1.55c. Bolt and nut manufacturers are buying steel bars more freely than for some time. The demand from the automobile manufacturers is spotty, but some of the car builders are still operating at good capacity. A Cleveland car equipment company has placed 600 tons of steel bars for car repair work ordered by the Baltimore & Ohio Railroad. The demand for plates is not active. The Solar Refining Co., Lima, which inquired for 750 tons of plates for tank work, has placed that tonnage with an independent mill. In structural lines, the Masonic Temple, Detroit, requiring 8500 tons, has been placed with the Russell Wheel & Foundry Co., Detroit. The structural situation has improved and some of the smaller fabricating shops are filled with work, mostly for buildings requiring 100 tons or less. The Republic Structural Iron Works Co. has taken the John Adams School, Cleveland, requiring 300 tons, and the John G. Pool Co., Dayton, has taken 120 tons for an addition to the American Building in that city.

Jobbers quote steel bars, 2.64c.; plates and structural shapes, 2.74c.; No. 9 galvanized wire, 2.50c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 3.75c.; No. 28 galvanized sheets, 4.75c.; No. 10 blue annealed sheets, 3.10c.; hoops and bands, 3.29c.; cold-rolled rounds, 3.85c.; flats, squares and hexagons, 4.35c.

Sheets.—Attempts of mills to establish prices on higher levels have been unsuccessful as far as blue annealed sheets are concerned, as these can be purchased at 2.25c. for all gages, although some mills are naming this price only for No. 12 gage and heavier sheets, adhering to 2.50c. for the lighter gages. Black and galvanized sheets are firm at 3c. and 4c. respectively. As most consumers placed orders before the price advance, the present demand is light. Late orders include 1000 tons placed with a Cleveland mill by a steel barrel manufacturer.

Warehouse Business.—Warehouses are still adhering to the old prices on sheets in spite of the advance in mill prices. Other warehouse prices are unchanged.

Coke.—The demand for foundry coke for prompt shipment continues fairly active and prices are firm. Two producers are now quoting standard Connellsville grades at \$5 per ton for the last quarter. Prompt shipment prices range from \$4.50 to \$4.75.

Bolts, Nuts and Rivets.—The improved demand for bolts and nuts previously noted continues. Prices have firmed up and makers claim that at present there is little if any shading of recent minimum prices. Cleveland makers have not changed prices quoted recently, although Pittsburgh makers are reported to have made some revisions in discounts, as shown on page 904 of this issue. Local quotations on small carriage bolts with rolled threads range from 60, 10 and 5 to 65, 10 and 10 off list. Inquiry for rivets has improved slightly. Prices are still weak, although the leading local manufacturer is adhering to higher prices it recently placed in effect—2.50c. for structural and 2.60c. for boiler rivets.

Old Material.—The market is a little firmer on active items, but as there is no demand from Cleveland mills, local prices are based largely on the Youngstown market involving a \$2.10 freight rate from Cleveland. Very little scrap was sold to consumers during the week, but there is some activity on the part of dealers in the Youngstown district, who are buying material to cover against recent mill orders. Sales are reported at \$14 to \$14.25 for heavy melting steel, \$9.10 for mixed borings and turnings and \$11.50 for compressed sheet steel scrap for Youngstown delivery. The latter grade has advanced locally 50c. or more a ton.

We quote per gross ton delivered consumers' yards in Cleveland and vicinity as follows:

Heavy melting steel.....	\$12.00 to \$12.50
Steel rails, under 3 ft.....	12.75 to 13.25
Steel rails, rerolling.....	14.25 to 14.75
Iron rails.....	11.00 to 12.00
Iron car axles.....	18.00 to 19.00
Low phosphorus melting scrap.....	12.50 to 13.00
Cast borings.....	7.25 to 7.75
Machine shop turnings.....	6.50 to 7.00
Mixed borings and short turnings.....	7.00 to 7.50
Compressed steel.....	9.25 to 9.35
Railroad wrought.....	12.00 to 12.50
Railroad malleable.....	12.00 to 12.75
Light bundled sheet stampings.....	4.50 to 5.00
Steel axle turnings.....	9.25 to 9.75
No. 1 cast.....	16.00 to 16.50
No. 1 busheling.....	7.50 to 8.00
Drop forge flashings, over 10 in.....	7.00 to 7.50
Drop forge flashings, under 10 in.....	7.00 to 7.50
Railroad grate bars.....	12.75 to 13.00
Stove plate.....	13.00 to 13.25
Pipes and flues.....	7.50 to 8.00

Buffalo

BUFFALO, Oct. 5.

Pig Iron.—Not more than 10,000 tons of iron was sold in this district last week—a contrast with the movement of the preceding period when 22,000 tons were sold. The producer who sold about 15,000 tons of iron in the week ending Sept. 24 found a barren field in the week that followed and sold but 500 tons. It is shipping on old contracts. Some stiffening is evident in the policy of this furnace to get \$21 for the base grade. It has virtually abandoned the \$20 base price and has refused business at this price. It is sold up to Oct. 15. Inquiries for 9000 tons engaging one interest are composed of small lots and but one embraces 1000 tons. The \$20 price is maintained for the base grade and malleable is quoted at \$20.50. Sales by this interest were 4000 tons. The delivery situation with reference to 1922 is becoming more important as 1921 nears the close. One furnace is practically out of the market by virtue of refusing to quote for first quarter delivery on the basis of present prices. One inquiry for 5000 tons was disregarded because the furnace does not care to book a tonnage of that size with conditions so unsettled. Canvass of Eastern buyers by one producer showed improved foundry conditions with particular reference to radiator and heating interests. The furnace which made this survey sold 5000 tons at \$20 and \$21.

We quote f.o.b. dealers' asking prices per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.....	\$21.00
No. 2X foundry, 2.25 to 2.75 sil.....	20.50
No. 2 plain, 1.75 to 2.25 sil.....	20.00
Basic (nominal).....	21.00
Malleable (nominal).....	22.00
Lake Superior charcoal.....	31.75

Finished Iron and Steel.—There is hardly a local interest which has not subscribed to the expression of improvement. While none is able to report normal

business, it is evident that the local market has picked up considerably. Tonnages are now embracing three figures rather than two—the rule so far this year. Bars, shapes, plates and cold-finished material are in good demand and several desirable orders for bolts and nuts have been placed here. Evidences of the depleted condition of stocks are coming to light daily, and in illustration of this one interest cites an instance of a buyer who found no raw material with which to start work on a sizable order and then made delivery the determining factor in placing the order. One day's business with an agency was greater than any day in 1921. The 1.65c. price on bars is being maintained on the general run of orders. Structural business is slow. The Progressive Structural Steel Co. has been sold to the Ferguson-Allan Corporation and the plant formerly occupied by the first named company will be enlarged.

Warehouse Business.—Sheet prices out of warehouses have been advanced to conform with recently announced mill schedules. The price on cold-rolled round shafting has been slightly reduced. A greater number of orders are appearing, but they do not seem to show any greater total in tonnages. Sheets are moving at a fair rate but structural material is not in great demand.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 2.90c.; plates, 2.90c.; plates, No. 8 gage, 3.25c.; soft steel bars and shapes, 2.80c.; hoops, 3.50c.; blue annealed sheets, No. 10, 3.55c.; galvanized steel sheets, No. 28, 5.25c.; black sheets, No. 28, 4.25c.; cold-rolled strip steel, 6.40c.; cold-rolled round shafting, 3.95c.

Old Material.—Greater activity is manifest all along the line. Prices are somewhat stronger and some dealers find themselves confronted with an unusual situation; having bought considerable material when the market was higher they now feel disinclined to take advantage of a demand, where prices are less than they paid. A number of small but encouraging sales have been made and generally the feeling is better.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel.....	\$13.00 to \$14.00
Low phos., 0.004 and under.....	16.00 to 17.00
No. 1 railroad wrought.....	13.00 to 14.00
Car wheels.....	14.00 to 15.00
Machine shop turnings.....	6.00 to 7.00
Cast iron borings.....	6.00 to 7.00
Heavy axle turnings.....	9.00 to 10.00
Grate bars.....	10.50 to 11.00
No. 1 busheling.....	10.00 to 11.00
Stove plate.....	13.00 to 14.00
Bundled sheet stampings.....	7.00 to 8.00
No. 1 machinery cast.....	16.00 to 17.00
Hydraulic compressed.....	10.00 to 10.50
Railroad malleable.....	12.00 to 13.00

Boston

BOSTON, Oct. 4.

Pig Iron.—Sales in this district the past week were again comparatively large, between 12,000 and 13,000 tons. They include 3000 tons of regular analysis No. 2X and 3000 tons No. 2X with phosphorus 1.30 to 1.50 to a textile machinery maker, 2000 tons eastern Pennsylvania No. 2 plain and other round tonnages, details about which are lacking, to a radiator company, and a long list of 100 to 450 ton lots, mostly eastern Pennsylvania No. 2X and No. 1X, all for delivery over the rest of the year. Included in the smaller lots is 400 tons of No. 1X western Pennsylvania iron at \$22, furnace, the first sale of iron from that district reported in this market for several months. Prospective business is confined to small tonnages. That of the Framingham Foundries for 200 tons of No. 1X and 100 tons of No. 2X represents the maximum. In the open market \$20 base apparently is the bottom on eastern and western Pennsylvania and Buffalo iron. Some of the large tonnages taken this and last week, however, were at approximately \$19, furnace base, this applying both to eastern Pennsylvania and Northern foundry iron, and even car lots have been booked on that basis. Competition from a Northern furnace with an advantage of 16c. in freights over eastern Pennsylvania has been a factor. The undertone of the market, therefore, is more unsettled than appears on the surface. In so far as this market is concerned, Virginia irons are \$23 to \$24, furnace base, a sale of 100 tons No. 2X at

\$23.50, furnace, representing the bottom. Delivered pig iron prices follow:

East. Penn., silicon 2.25 to 2.75.....	\$24.56 to \$26.06
East. Penn., silicon 1.75 to 2.25.....	24.06 to 25.56
Buffalo, silicon 2.25 to 2.75.....	25.96 to 26.49
Buffalo, silicon, 1.75 to 2.25.....	25.46 to 25.96
Virginia, silicon 2.25 to 2.75.....	30.08 to 31.08
Virginia, silicon 1.75 to 2.25.....	29.58 to 30.58
Alabama, silicon 2.25 to 2.75.....	30.16
Alabama, silicon 1.75 to 2.25.....	29.66

Finished Material.—Bids are asked on 700 tons of structural steel for a Federal Street, Boston, office building, for 300 tons each on a Boston telephone exchange, a Providence, R. I., high school, and a Springfield, Mass., high school, and on 150 tons for a Wakefield, Mass., high school. Indications point to other round tonnages coming on the market before long. The New England Structural Co. is awarded 1100 tons for a theater and office building, Boston. The market on structural steel is 1.60c., Pittsburgh. A notable increase in plate sales for stock is noted, but no large tonnages are involved. A New England railroad has bought approximately 500 plates representing about 50 tons. This order illustrates going business. The plate market ranges from 1.60c. to 1.65c. The Bath Iron Works, Bath, Me., has bought approximately 1500 tons of ship plates, shapes, bars and tubes from the Midvale Steel Co., and approximately 150 tons of boiler plates from the Worth Steel Co. Prices on bars take a wide range, 1.50c. to 1.75c., Pittsburgh. A round tonnage of bars, flats, etc., was taken this week by a local warehouse at 1.50c., and smaller tonnages by various other stockers at 1.60c., 1.65c. and 1.75c. Manufacturers are buying few bars. New England steel mills are busier, some of them running on full time,

Jobbers now quote: Soft steel bars, \$2.81½ per 100 lb. base; flats, \$3.83 to \$3.93; concrete bars, \$2.50 to \$3.09; tire steel, \$4.20 to \$4.70; spring steel, open hearth, \$5.25; crucible, \$11.50; steel bands, \$3.46½ to \$3.98; steel hoops, \$4.18; toe cink steel, \$5.25; cold rolled steel, \$3.95 to \$4.45; structural steel, \$2.81½ to \$2.96½; plates, \$2.91½ to \$3.10; No. 10 blue annealed sheets, \$3.73; No. 28 black sheets, \$4.75; No. 28 galvanized sheets, \$5.25; refined iron, \$2.83 to \$4.75; best refined, \$4.75; Wayne iron, \$6.50; Norway iron round, ¼-in. to 2½-in., 5.75c. to 6.75c. per lb. net; other sizes, 7.75c. base.

Cast Iron Pipe.—The usual dullness in cast iron pipe business prevailing this time of year does not hold this season, with municipalities and private companies inquiring and buying freely. Moreover, there are large tonnages sure to take the form of inquiries next spring. West Springfield, Mass., will open bids Wednesday of this week on 1100 tons of 16-in. pipe, Class B and C, for a new supply line to furnish the repair shop of the Boston & Albany Railroad. On Thursday of this week, Malden, Mass., will open bids for about 60 tons of 6- and 8-in. pipe. Some municipalities wish pipe with quick delivery, thereby giving them fewer pipe foundries to choose from. One of these near-future delivery demands was that of Woburn, Mass., which wanted 100 tons. A charitable feature of present business is that several municipalities are buying pipe to give the unemployed jobs in laying it, as instanced by Beverly, Mass., which is employing out-of-work employees of the United Shoe Machinery Corporation. Buying is expected next spring on the part of Boston, Brockton, North Adams and Springfield. We quote per net ton in carload lots, f.o.b. Boston and district as follows: 3-in., \$66.70; 4-in., \$56.70; 6-in., \$51.70; 10-in. and larger, \$50.70; 12-in. and larger, \$49.70; with \$4 differential for Class A and gas pipe.

Warehouse Business.—The warehouse market on cold-rolled steel is 20c. per 100 lb. lower, on Wayne iron 50c. and on Norway iron \$1 to \$1.35, according to size. Otherwise prices are unchanged, but inclined toward softness, notwithstanding a slightly better demand. Going business is not of sufficient proportions to eliminate competitive prices when consumers shop around the market. Cap and set screws are 5 per cent cheaper, and machine screws and machine screw nuts even more so.

Coke.—Although prices on foundry coke in the Connellsville district are firmer, New England producers continue to quote on a basis of \$10.66 delivered where the local freight rate does not exceed \$3.40. The undertone of the market for local coke is reported very strong, however. The past fortnight has witnessed a considerable increase in the aggregate daily New

England foundry melt, which fact, coupled with nearing winter months, has resulted in much freer shipping instructions on coke contracts and additional tonnage bookings. These have not as yet been reflected in the shipments from Everett, Mass., and Providence, R. I., but should be shortly.

Old Material.—Foundries are, perhaps, buying machinery cast a little more freely, but the market is a long way from being active, and in this respect entirely out of line with the pig iron market. Prices are strong and tending upward, although not quotably higher. Brake shoe makers have taken additional stove plate tonnages at about \$16.50 delivered. There is not enough being done in railroad malleable to really constitute a market and prices are largely nominal. Heavy melting steel is about 50c. higher in sympathy with advances from outside markets. Both rolling mill and chemical borings are in better demand and 50c. higher as a result. Forged scrap and bundled skeleton also are more active, with average sales around \$5.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$18.50 to \$20.00
No. 2 machinery cast.....	16.50 to 17.50
Stove plate	15.50 to 16.50
Railroad malleable	11.50 to 12.50

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$7.00 to \$7.50
No. 1 railroad wrought.....	10.00 to 10.50
No. 1 yard wrought.....	8.00 to 8.50
Wrought pipe (1-in. in diameter, over 2 ft. long).....	8.00 to 8.50
Machine shop turnings.....	2.50 to 3.00
Cast iron borings, rolling mill.....	4.00 to 4.50
Cast iron borings, chemical.....	4.50 to 5.00
Blast furnace borings and turnings.....	2.50 to 2.75
Forged scrap and bundled skeleton.....	4.50 to 5.00
Street car axles and shafting.....	12.00 to 13.00
Car wheels	13.00 to 14.00
Revolving rails	9.00 to 10.00

Birmingham

BIRMINGHAM, ALA., Oct. 4.

Pig Iron.—Any doubt which may have existed in the minds of buyers during the early part of the week as to the firmness of the \$19 base price for Birmingham standard iron was dissipated by the end of the week, and the aggregate inquiries for first quarter 1922 deliveries would indicate that buyers are also well satisfied that rock bottom has been reached. The feature of the market during the week was the gradual shifting of hand-to-mouth buying to more substantial lots, even spot iron. A close estimate of the movement of stock iron during the month will approximate 30,000 tons of foundry iron. This tonnage exceeds the previous month's record by several thousand tons. In addition to this record, it is significant to note that no iron was piled on the yard by the active stacks, notwithstanding the fact that one of the large producers has two of its stacks producing at capacity. This same interest will probably blow in an additional stack by the middle of the present month. In addition to the furnace located at Holt, which was blown in about the middle of September, definite announcement has been made that one stack at Gadsden will be producing iron by Oct. 10, and still another at Thomas by the same date. These two stacks will increase production at the rate of approximately 500 tons per day. With a spread of \$3 to \$3.50 per ton between Northern and Southern irons, Birmingham sellers are again quoting and delivering iron for use at points in Indiana and Ohio. Practically no iron has moved into these territories for six to eight months past. There has also been a decided improvement in Southern iron consumption, and at the present time there is one large foundry in the Birmingham district busily engaged night and day on sugarhouse machinery for Mexico. The general castings business has also shown improvement, even sash weights and O G washers. These last mentioned products are being shipped as far West as San Antonio, Texas, in carload lots.

We quote per gross ton f.o.b. Birmingham district furnaces, as follows:

Foundry, Si 1.75 to 2.25.....	\$19.00
Basic	18.00
Charcoal warmblast	35.00

Cast-Iron Pipe.—The manufacturers of high test cast-iron pipe report a fairly satisfactory business

during the week. While no large lettings are reported, small lots aggregated a tonnage which will insure no curtailment of production under present rate. The three plants in the district proper, while not operating all pits, are running on full time and at the rate of approximately 50 per cent of pit capacity. No change in price is recorded, but an advance will be necessary should pig iron advance even 50c. per ton. Base price for 6-in. pipe is \$35 per ton with slight concession for larger sizes. Volume business for cast iron sanitary pipe has shown an increase. The Central Pipe & Foundry Co. has resumed operations at its Anniston plant, thus creating a total of 12 out of 13 plants in operation at Anniston, the largest sanitary pipe production center in the world. Cast iron soil pipe is quoted at \$40 per ton f.o.b. works for small pipe and \$35 per ton for large or heavy pipe.

Coal and Coke.—The recent "cold snap" has stimulated the domestic coal market, and the users of steam coal have shown a decided tendency to come into the market during the past week. Approximately 10,000 tons of steam and bunker coal moved by water from the mines to New Orleans and Mobile the past week. At least 350 beehive coke ovens were fired by the furnace interests, and a portion of the Ensley by-product ovens of the Semet-Solvay Co. have been put in commission. One large producer of by-product coke supplying commercial coke will "warm up" 100 beehive ovens the coming week. It is understood that additional Mexican coke orders have been received. Strictly standard foundry 24 and 72-hr. coke is selling for \$5.75 to \$6 per ton at the ovens. The Barrett Co. is operating 60 beehive coke ovens in the production of "pitch" coke for foundry trade. The residuum pitch which heretofore was supplied to foreign markets for binder purposes is now being utilized in the manufacture of coke of high grade. Its manufacture has been tried in every available type oven, but the old beehive oven of slow carbonization conditions has proven ideal.

Old Material.—The firmness of the pig iron market has been reflected in the old material market and some materials have shown slight advances. Scrap steel is the most inactive material, due to the fact that the largest user in the South is practically out of the market at this time. No. 1 cast and unoxidized stove plate are fairly active. Turnings of all character are unsought at this time. Some of the large dealers have comparatively large stocks on hand, and seem willing to continue to stock on the strength of activity in pig iron.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Steel rails	\$11.00 to \$12.00
No. 1 steel	10.00 to 11.00
No. 1 cast	15.00 to 16.00
Car wheels	15.00 to 16.00
Tramcar wheels	12.00 to 13.00
No. 1 wrought	13.00 to 14.00
Stove plate	10.00 to 11.00
Cast iron borings	6.00 to 7.00
Machine shop turnings	6.00 to 7.00

St. Louis

ST. LOUIS, Oct. 4.

Pig Iron.—The melt of pig iron in this district is increasing and there is an improvement in inquiries and sales. A nearby Illinois melter bought 1500 tons of basic iron. No inquiries of importance are pending, although the number calling for from a carload to 200 tons make up a fairly large volume. The stove factories in St. Louis, Belleville and Quincy report a revival in demand, 11 firms canvassed by the Federal Reserve Bank indicating August sales from 12 to 20 per cent over those in July, although from 54 to 62 per cent under August, 1920. Prices are being well maintained, and the market is firm.

We quote delivered consumers' yards St. Louis as follows, having added to furnace prices \$2.88 freight and war tax from Chicago and \$5.91 from Birmingham:

Northern foundry, sil. 1.75 to 2.25	\$24.88
Northern malleable, sil. 1.75 to 2.25	24.88
Basic	24.88
Southern foundry, sil. 1.75 to 2.25	24.91

Finished Iron and Steel.—Although no business of consequence was placed, the last week was marked by an encouraging lot of inquiries from the railroads. The principal inquiry came from the Cotton Belt, which

asked for prices on 10,000 tons of 85-lb. A. S. C. E. rails for 1922 requirements. The Terminal Railway Association has an inquiry out for two cars of tie plates. The Wabash inquiries included 30 tons of tie plates, a carload of wheels and other material. The Missouri Pacific has a lot of small inquiries out, including a car of axles. That road bought 500 lb. of tool steel. The fabrication contract for the Government nanger at Belleville, involving 3600 tons of steel, has been let to the McClintic-Marshall Co. St. Louis contractors are figuring on the Masonic building at Springfield, Mo., involving 50 tons of bars. There is no change in warehouse prices. The National Enameling & Stamping Co. resumed operations Oct. 3 at Granite City, starting three furnaces. Its St. Louis rolling mill will resume the latter part of the week.

For stock out of warehouse we quote: Soft steel bars, 2.87½c. per lb.; iron bars, 2.87½c.; structural shapes, 2.97½c.; tank plates, 2.97½c.; No. 10 blue annealed sheets, 3.47½c.; No. 28 black sheets, cold rolled, one pass, 4.10c.; cold drawn rounds, shafting and screw stock, 4.20c.; structural rivets, \$3.77½ per 100 lb.; boiler rivets, \$3.87½; tank rivets, 7/16 in. and smaller, 60-10 per cent off list; machine bolts, large, 55 per cent; small, 60 per cent; carriage bolts, large, 50-5 per cent; small, 55 per cent; lag screws, 60 per cent; hot pressed nuts, square or hexagon blank, \$3.25; and tapped, \$3.00 off list.

Coke.—The higher levels in coke are being held to more generally than they have been, the range in price of Connellsville coke being from \$4.75 to \$5.50. The trade is interested in an inquiry from a Western melter for 7500 tons of furnace coke. The demand for domestic coke is increasing, although it lacks the necessary stimulant of cold weather.

Old Material.—Prices on old material are unchanged. However, the tone of the market is strong, and it appears that it would take but little increase in demand to send prices upward. Railroads are said to be releasing requisitions for supplies more freely, which should mean slightly better operations at some of the consuming plants, so that a better volume of buying should result. However, the improvement has not as yet had any material effect. The following railroad lists are before the market this week: Pennsylvania, 2500 tons; Kansas City Terminal, 400 tons; St. Louis Southwestern, 250 tons; Wabash, 100 tons; Kansas City Southern, 100 tons.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	\$14.50 to \$15.00
Steel rails, re-rolling	12.50 to 13.00
Steel rails, less than 3 ft.	13.00 to 13.50
Relaying rails, standard section ..	29.00 to 30.00
Cast iron car wheels	14.50 to 15.00
No. 1 heavy railroad melting steel ..	11.50 to 12.00
No. 1 heavy shoveling steel	11.00 to 11.50
Ordinary shoveling steel	10.50 to 11.00
Frogs, switches and guards, cut apart ..	11.50 to 12.00
Ordinary bundle sheet	5.50 to 6.00
Per Net Ton	
Heavy axle and tire turnings	\$7.50 to \$8.00
Iron angle bars	11.50 to 12.00
Steel angle bars	10.50 to 11.00
Iron car axles	20.00 to 20.50
Steel car axles	15.50 to 16.00
Wrought iron arch bars and transoms ..	15.50 to 16.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Railroad springs	12.00 to 12.50
Steel couplers and knuckles	12.00 to 12.50
Locomotive tire, 42 in. and over, smooth inside	9.50 to 10.00
No. 1 dealer's forge	8.50 to 9.00
Cast iron borings	7.50 to 8.00
No. 1 busheling	11.00 to 11.50
No. 1 boilers cut in sheets and rings ..	7.00 to 7.50
No. 1 railroad casts	15.00 to 15.50
Stove plate and light cast	12.00 to 12.50
Railroad malleable	10.50 to 11.00
Agricultural malleable	10.00 to 10.50
Pipes and flues	8.50 to 9.00
Heavy railroad sheet and tank	7.50 to 8.00
Light railroad sheet	4.50 to 5.00
Railroad grate bars	9.50 to 10.00
Machine shop turnings	6.00 to 6.50
Country mixed iron	7.50 to 8.00
Uncut railroad mixed	9.00 to 9.50
Horseshoes	11.00 to 11.50
Railroad brake shoes	9.50 to 10.00

The Heppenstall Forge Co. of Bridgeport, Conn., is changing all the heating furnaces in its forge department from coal to oil fired. A similar type of oil-fired furnace has been in use at the plant of the Heppenstall Forge & Knife Co. in Pittsburgh since April. The machine shop at Bridgeport is working single time, and preparations are being made for putting the forge shop on a schedule of two to three days a week.

Cincinnati

CINCINNATI, Oct. 4.

Pig Iron.—By comparison with preceding ones, the market was dull last week, carload sales predominating. We note, however, a sale of 500 tons of Bessemer iron at \$21, Ironton, and 100 tons of Northern iron to an Indiana melter at \$21.50, Chicago. A Kentucky melter also purchased 200 tons of Bessemer at \$21.50, Chicago, and another took 200 tons of charcoal at \$28, furnace. A central Ohio melter bought 250 tons of Southern iron to complete mixtures, paying \$19 base, Birmingham. The only inquiry of consequence is from the American Radiator Co. for 500 tons for its Birmingham plant. There was a little activity in alloys, and we note a sale of 500 tons of 50 per cent ferrosilicon to a steel foundry at \$60, delivered. Several carload sales of spiegeleisen and ferromanganese were also made. It is reported that several furnaces in the South are considering resuming operations about Nov. 1 and some of them are now feeling out the coke market. There have been no price changes noted during the week, though several lake front furnaces are reported to be quoting at \$20, furnace, in competitive territory.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	\$23.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	24.00
Ohio silvery, 8 per cent sil.	32.86
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	23.52
Basic, Northern	22.52
Malleable	24.02

Finished Material.—There has been some little covering by manufacturers and jobbers in the heavier steel products in anticipation of higher prices which are expected to follow the recent announcement by the Steel Corporation of minimum prices it will quote. While the volume of business is not heavy quotations made during the last week or so are being closed. Some mills have already withdrawn quotations lower than 1.70c. on bars, shapes and plates. The volume of sheet business fell off considerably during the past week, but a number of orders had been booked at the advanced prices. In wire and wire products, orders are reported as fairly numerous. Some shading of prices on cold-rolled steel and screw stock are reported. There are no new inquiries of size being figured on. The Big Four Railroad has asked for bids on 5500 pairs of angle bars, 700 kegs of track bolts and 5000 kegs of track spikes. There is no particular activity in the structural field, the only new project coming up being the Catholic Club at Memphis, Tenn., involving 500 tons of steel. Pending projects include a building for the Indianapolis Athletic Club, a shop for Purdue University at Lafayette, Ind., and a 25-story office building for Columbus, plans of which are being prepared by Frank H. Packard. There were no lettings reported.

Warehouse Business.—Jobbers report orders more numerous and for increased tonnages. A reduction has been made in boiler tubes to correspond to recent reductions made by mills. Galvanized sheets are \$5 a ton lower, being now quoted at 5c. Blue annealed and black sheets are unchanged.

Iron and steel bars, 3c. base; hoops and bands, 2.75c. base; shapes, 2.85c. base; plates, 2.85c. base; reinforcing bars, 3.07½c. base; cold rolled rounds, 1½ in. and larger, 4.10c. under 1½ in. and flats, squares and hexagons, 4.75c.; No. 10 blue annealed sheets, 3.50c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5c.; wire nails, \$3.40 per keg base; No. 9 annealed wire, \$8.90 per 100 lb.

Coke.—Sales have fallen off considerably but the tonnage of foundry coke moving is still fair. There are no inquiries of size, one and two carload sales constituting the bulk of the activity. Prices are firm at previous quotations.

Old Material.—There is some activity in the scrap market, and inquiries are increasing in number. Increased activity on the part of the dealers has resulted in advancing prices from 50c. to \$1 throughout the list. Sales are mostly confined to carload lots, but the start-

ing up of steel plants in this district is expected to soon create a demand for heavier tonnages.

We quote dealers' buying prices:

Per Gross Ton	
Bundled sheets	\$4.50 to \$5.50
Iron rails	12.50 to 13.00
Relaying rails, 50 lb. and up	25.50 to 26.50
Re-rolling steel rails	11.00 to 12.00
Heavy melting steel	9.50 to 10.00
Steel rails for melting	9.50 to 10.50
Car wheels	12.50 to 13.50
Per Net Ton	
No. 1 railroad wrought	9.00 to 10.00
Cast borings	3.50 to 4.00
Steel turnings	2.50 to 3.00
Railroad cast	12.50 to 13.00
No. 1 machinery	14.00 to 15.00
Burnt scrap	8.00 to 9.00
Iron axles	16.00 to 17.00
Locomotive tires (smooth inside)	10.00 to 10.50
Pipes and flues	4.50 to 5.50

Report on Lake Erie-Ohio River Canal

Interest in the report of the Army Engineer office of the War Department on the proposed Lake Erie-Ohio River canal was dampened in the Pittsburgh and Youngstown districts by the recommendation that the projected waterway be delayed at this time on account of the great cost and the need for Government economy. The decision favored the eastern route from Ashtabula to Pittsburgh via the Mahoning River through Youngstown. The army engineers, however, give interested parties an opportunity to present reasons why the canal should be started at this time. They state that they would like to make a further investigation into the economic reasons why the canal should be built before making a final report. Managers of larger steel companies do not regard very seriously the suggestion that the industries in the affected districts should largely finance the undertaking, because of the financial difficulties which now confront them.

To Extend Credit to Users Through Jobbers

The Black & Decker Mfg. Co., whose products consist principally of electric motor driven shop equipment, such as portable electric drills, grinders, etc., has put into effect what it terms the Black & Decker national credit service. The company's products are sold through jobbers and the new service enables users to buy through jobbers by paying 23 per cent of the regular price of the item in cash and the balance in six equal monthly payments. Nothing extra is added to the standard price for the credit and no interest is charged.

The company has supplied jobbers with printed forms to be used for orders taken under this plan. The jobber forwards these orders to the company which discounts them for the jobber so that every sale made under this plan is in effect a cash sale for the jobber. The plan is an acknowledgment that the principal obstacle in the path of normal sales to-day is financial.

St. Louis Labor Conditions

Replies received from questionnaires addressed by the Eighth Federal Reserve Bank at St. Louis to 210 leading employers in that district, with an estimated normal complement of 215,784 workers asking for employment data developed that the number of employees of the reporting interests decreased 57,653 or 21.3 per cent between the dates Aug. 1, 1920, and Aug. 1, 1921. On Aug. 1, 1920, the number was 7743 or 3.5 per cent above normal, and on Aug. 1, 1921, the total was 49,910 or 23.1 per cent under normal. Wages, figured on a semi-monthly basis decreased \$4,858,038 or 30.1 per cent between Aug. 1, 1920, and Aug. 1, 1921.

The Eighth Federal Reserve district includes eastern Missouri, southern Illinois, southern Indiana, Kentucky, Tennessee, Arkansas and Mississippi.

Preparations have been made to start one of the three Southern furnaces of the Republic Iron & Steel Co. in the Thomas group at Birmingham, Ala., according to announcement from the general offices at Youngstown, Ohio.

Philadelphia

PHILADELPHIA, Oct. 4.

The announcement a week ago that the Carnegie Steel Co. had "fixed" its prices for plates and shapes at 1.75c. and for bars at 1.65c., Pittsburgh, has had the effect of raising slightly the quotations of independent steel companies. At least three of the Eastern plate mills have adopted 1.75c., Pittsburgh, as their price, though one mill has taken some orders within the past few days at 1.65c. Included in these orders was a plate contract for fourth quarter, the first contract this company had written in 13 months. One or two mills are still quoting 1.60c., Pittsburgh, on plates and shapes, and there are outstanding quotations at that level from nearly all mills, which will be given adequate protection. The steel bar price has stiffened so that 1.60c., Pittsburgh, now appears to be the minimum on any new business. Just how effectual these price advances will be remains to be seen, but the steel companies making them explain that they have been getting very little business at the lower levels, particularly on plates, and they will be no worse off if they attempt to get a price more in line with costs of production. The recent advance of \$5 a ton on sheets has not been wholly effective, except in putting on the books of the mills a fairly good volume of business at the old prices. There has been very little business done at the higher level, which some mills are not strictly adhering to.

There is a very much better tone in the market and steel companies are more hopeful of a gradually expanding trade during the fall and winter. Consumers in a greater diversity of lines have been coming into the market, and though their orders are small, it is a possible indication that stocks of material on hand are pretty well depleted.

Two sales of basic iron totaling 9000 tons constitute the greatest activity in steel-making iron in this district in a single week since the depression set in.

Pig Iron.—An Eastern manufacturer of plates has bought 4000 tons of basic iron for early shipment at \$20.50, delivered. A central Pennsylvania consumer has bought 5000 tons, the delivered price also being approximately \$20.50. In one sale the furnace price was \$19.25 and in the other \$20. This represents an advance in basic iron since the last sale of importance of \$1.25 per ton, delivered. More significant, however, is the fact that this is the greatest activity in steel-making iron in this district in a single week this year. The foundry iron market is quieter. An interesting indication of the status of consumers' stocks is the requests which furnaces are getting to hurry up shipments of orders on their books. Another Eastern furnace has virtually withdrawn from the market to the extent that it is not actively soliciting business, though it will take care of its regular customers who apply for iron. This furnace has enough orders on hand for two or three months' operation and its owners and agents will await developments in the market before actively selling again. More furnaces are coming into the market for business. The Port Henry, N. Y., stack of Witherbee, Sherman & Co. will be blown in shortly, this furnace having a better freight rate into New England than either Buffalo or eastern Pennsylvania furnaces. The Adrian furnace will probably go in about Nov. 1 and the Hellertown furnace of the Thomas Iron Co. at an earlier date. Prices for foundry iron have not changed except that another furnace has advanced to a basis of \$21 for No. 2 plain, but this grade is still obtainable at \$20.50, furnace. The extra for No. 2X is 50c. and \$1 a ton, depending upon the furnace.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to \$1.54 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$21.34 to \$22.04
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.84 to 22.54
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.74 to 28.74
Virginia No. 2X, 2.25 to 2.75 sil.	28.24 to 29.74
Basic deliv. eastern Pa.	20.50
Gray forge	20.50 to 21.50
Malleable	24.00 to 25.00
Standard low phos. (f.o.b. furnace)	36.50
Copper bearing low phos. (f.o.b. furnace)	35.00

Semi-Finished Steel.—There is no demand for billets, slabs or sheet bars. Prices are unchanged.

Plates.—Two Eastern plate mills have followed the action of Carnegie Steel Co. in naming 1.75c., Pittsburgh, as their minimum for plates. Another has adopted a range from 1.65c. to 1.75c., the lower price applying only to attractive specifications, and this company may shortly advance to a flat 1.75c. price. Plates are still obtainable, however, at 1.60c., but some of the companies quoting this price say they may withdraw it any moment. There has been very little business at the low levels, hence the makers believe they have nothing to lose and everything to gain by attempting to get a price more nearly in line with what it is costing them to produce plates. No new car work has come out, but there is still considerable locomotive work pending, including 120 for Argentina, 50 for the Chicago, Milwaukee & St. Paul and 23 for the Atlantic Coast Line.

Structural Material.—While the 1.60c. price on structural shapes has not entirely disappeared, some producers are making an effort to obtain 1.65c., Pittsburgh. Very little new structural work is up in this district, but fabricators are figuring on a fair volume of business, mostly for other sections of the country. Fabricators are showing a disposition to put in stocks, but the orders as a rule are small.

Bars.—Steel bars are now quoted at 1.60c., Pittsburgh. Any outstanding quotations below this price will shortly be withdrawn if not acted upon. A leading independent has taken a few contracts for fourth quarter. Bar iron is quoted at 1.60c., Pittsburgh, but there is very little business. A better demand for railroad spikes is reported, but prices are weak, 2.40c., Pittsburgh, having been shaded on some of the business recently taken.

Sheets.—Not all of the makers of sheets have conformed to the recent advance of \$5 a ton put into effect by the leading mills. Very little business apparently has been done at the higher level, but most of the mills booked a fair volume of business at the old prices on which present operations are based.

Rivets.—An Eastern maker of rivets has advanced prices 10c. per 100 lb., making structural quality 2.50c. and boiler quality 2.60c., Pittsburgh.

Warehouse Business.—Cold-rolled steel has been reduced \$5 a ton by local warehouses.

Old Material.—A firm undertone in the scrap market is due very largely to the hesitancy of dealers in selling at present quotations for fear that they would not be able to "cover" at a profit. While mills have succeeded in picking up small lots of heavy melting steel around \$12 a ton, no one can be found who would sell a tonnage at this price. The same situation applies more or less to other grades of scrap. Some prices have advanced slightly within the week, but it will require a larger demand to bring about any marked advance. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	\$11.75 to \$12.00
Scrap rail	11.75 to 12.00
Steel rails, rerolling	15.00 to 15.50
No. 1 low phos., heavy 0.04 and under	16.00 to 17.00
Car wheels	17.00 to 17.50
No. 1 railroad wrought	15.50 to 16.00
No. 1 yard wrought	13.50 to 14.00
No. 1 forge fire	10.00 to 10.50
Bundled sheets (for steel works)	8.50 to 9.00
No. 1 busheling	11.50 to 12.00
No. 2 busheling	10.00 to 11.00
Turnings (short shoveling grade for blast furnace use)	8.00 to 8.50
Mixed borings and turnings (for blast furnace use)	8.00 to 8.50
Machine-shop turnings (for rolling mill and steel works use)	8.00 to 8.50
Heavy axle turnings (or equivalent)	9.50 to 10.00
Cast borings (for rolling mills)	9.50 to 10.00
Cast borings (for chemical plants)	10.50 to 11.00
No. 1 cast	17.00 to 18.00
Railroad grate bars	13.50 to 14.00
Stove plate (for steel plant use)	13.50 to 14.00
Railroad malleable	15.50 to 16.50
Wrought iron and soft steel pipes and tubes (new specifications)	13.25 to 13.75
Iron car axles	No market
Steel car axles	No market

GERMAN STEEL UNOBTAINABLE

Mills Refuse Orders from the United States— German Exporters Converting Marks Into Materials in Warehouse

NEW YORK, Oct. 4.—Although the Association of German Industry, which recently convened in Munich, Germany, intimated that Germany would be forced by the war indemnity to flood the world's markets with German goods, the flood is evidently being intentionally diverted from the United States, for at present, agents of German interests here state that they are unable to obtain shipments of any kind of iron or steel manufactures. According to reports received by the representatives of such interests as the Hugo Stinnes combination, Thyssen & Co., the Westphalia Iron & Wire Works, the Gelsenkirchen-bergwerks Aktien Gesellschaft, etc., German mills are sold up, but largely with contracts to exporters and export organizations in Bremen, Hamburg and other ports. The warehouses in some ports, notably Bremen, are reported filled to overflowing, in some instances exporters having contracted for the entire output of certain mills over a limited period.

In the meantime, although shipments of material continue to South American markets and the Far East, little can be obtained for "overseas" shipment. This recent frenzied buying is said by New York exporters to be largely speculative, the direct result of the demoralization of the German mark. With rapidly dwindling confidence in the future of the mark, exporters are as far as possible turning their assets into tangible property, which depreciates in value far less rapidly than the mark.

Agents and representatives of German interests in New York report that they are rejecting a large volume of orders daily, because of inability to fill these orders through their connections in Germany. One representative of a large German combination states that he could place at least 100,000 kegs of wire nails if he could obtain shipments. This estimate is based on actual offers of orders from American consumers. Another reports having cabled a firm offer for a total of 80,000 kegs of wire nails to fill three orders that have been placed with him by American buyers. An order for a total of 50,000 lb. of plain wire was recently rejected by a German agent unable to obtain quotations from his Continental connection and another for 3000 tons of wire rods was refused by the New York export connection of a German seller.

German Aluminum Higher

The present disinclination to sell is evidently not confined to the manufacturers and sellers of iron and steel. Aluminum of German manufacture, which has been selling in the American market for 3c. to 4c. per lb. less than the official quotation of the Aluminum Co. of America, is reported to have been increased to a point where it is now quoted at 23c. per lb. delivered New York, 1½c. per lb. less than the market and with a 1c. per lb. addition for the importer to cover handling and profit, ½c. per lb. less than the domestic price. The output of the two largest producers, in Germany, who recently combined, is estimated at 40,000 tons per year. Recent low quotations were generally confined to a few small independent producers of ingot aluminum, who have evidently now withdrawn from the market.

Contrasted with this refusal to ship material to the United States, German activity is reported to be continuing in South America, even the New York representatives of German interests evincing a keen interest in large projects in South American countries, upon which they may quote for material and equipment to the American contractors who obtain the contracts for construction.

Recent Pacific Coast Quotations

According to the sales manager of a large Pacific coast steel company, German competition is being

severely felt on the coast. His reports of quotations submitted by Germany, however, are based on the prices given two or three weeks ago. He states that an order was recently placed by a Portland, Ore., buyer for a tonnage of bars of German origin at 1.70c. per lb., c.i.f. Portland, and offerings have been made as low as 1.65c. per lb. c.i.f. Pacific coast ports. A Seattle company about three weeks ago purchased 500 tons of 60-lb. rails, A.S.C.E. specifications at \$37.50 per gross ton, c.i.f. Seattle, this price including all accessories, angle bars, bolts and spikes. It is further reported from the Pacific coast that the purchasing agent of one of the transcontinental lines has received a quotation of \$34 per gross ton, c.i.f. Pacific coast port, on a minimum order of 5000 tons of rails. The recent decline in the domestic market, according to this sales manager, has tended to prevent buyers from acting on German and other foreign quotations until the bottom were reached in our own prices, but with the margin still wide, heavier buying may be expected if deliveries are at all good.

Some importing of Caucasian manganese ore from the port of Poti, Georgian Republic, may be done in the near future and at present German ferro-manganese made from this ore is obtainable in the United States. Exports from the Georgian Republic have been greatly curtailed since the war, because of the extremely communistic government of the country, which has insisted upon heavy taxation of foreign capital and exports of ore. One seller of foreign ores in New York states that 50 per cent manganese ore from this district can be put down in New York for about \$11.50 c.i.f.

A representative of Belgian interests who has been successfully selling Belgian pig iron to Pacific coast consumers because of the low ocean freights from Belgian ports to Pacific coast ports, reports that he has under negotiation an order for several thousand tons of foundry iron of Belgian origin to a New England consumer, at slightly lower than current domestic quotations.

The Shiva Nath Cycle & Motor Co., Ltd., Chapra, India, has been organized to manufacture and import motorcycles, accessories, automobile bodies and motors. The company states that it is in the market for a 1500 to 2000-hp. engine for use in its plant.

Slow Progress in Pittsburgh-Plus Case

WASHINGTON, Oct. 4.—No date or place to begin hearings by the Federal Trade Commission in the so-called Pittsburgh-plus case will be named until after the commission has gathered the necessary evidence, according to Chairman Thompson. He stated that work of obtaining evidence from the various steel producing points still is under way and that it is not possible to say how long it will be before it is concluded. Originally it was intended to begin the hearings early in September, but the task of gathering the required material, it is stated, has proved to be greater than had been anticipated.

No successor has been named as yet to John Garland Pollard, whose term as a member of the commission expired Sept. 26. It is commonly understood that Judge Vernon Van Fleet, South Bend, Ind., now associated with the Department of Justice in connection with work of reorganization, will be named to succeed Mr. Pollard.

It is assumed that the successor of Mr. Pollard will go over the evidence in the Pittsburgh-plus case, and it is a source of speculation as to whether he may ask that the vote by which the complaint was issued be reconsidered. This vote was 3 to 2, Mr. Pollard being one of those voting in favor of its issuance, so that, of the present personnel of the commission, there are two who voted for and two who voted against issuance of the complaint. Consequently a vote to reconsider could result in abandoning the complaint should the new member vote to that effect, although admittedly there is no indication that this will be done, but the possibility apparently exists.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic..	0.35	Kansas City	\$0.815
Philadelphia, export..	0.265	Kansas City (pipe)...	0.77
Baltimore, domestic...	0.335	St. Paul	0.665
Baltimore, export.....	0.255	Omaha	0.815
New York, domestic...	0.38	Omaha (pipe)	0.77
New York, export.....	0.285	Denver	1.35
Boston, domestic	0.415	Denver (wire products)	1.415
Boston, export	0.285	Pacific Coast	1.665
Buffalo	0.295	Pacific Coast, ship plates	1.335
Cleveland	0.24	Birmingham	0.765
Cincinnati	0.325	Jacksonville, all rail..	0.555
Indianapolis	0.345	Jacksonville, rail and	
Chicago	0.38	water	0.46
St. Louis	0.475	New Orleans	0.515

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 46,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, \$1; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ½ in. thick and over, and zebs, structural sizes, 1.60c. to 1.75c.

Sheared plates, ¼ in. and heavier, tank quality, 1.60c. to 1.75c.

Wire Products

Wire nails, \$2.90 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.25 and shorter than 1 in., \$1.75; bright Bessemer and basic wire, \$2.60 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$2.60; galvanized wire, \$3.10; galvanized barbed wire, \$3.55; galvanized fence staples, \$3.55; painted barbed wire, \$3.05; polished fence staples, \$3.05; cement-coated nails, per count keg, \$2.45; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 68 to 70½ per cent off list for carload lots, 67 to 69½ per cent for 1000-rod lots, and 66 to 68½ per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....\$2.40 case
Large boiler rivets.....\$2.50 case
Small rivets 70, 10 and 5 per cent off list |

Machine bolts, small, rolled threads, 70, 10 and 5 per cent off list

Machine bolts, small, cut threads, 70 and 5 per cent off list

Machine bolts, larger and longer, .65, 10 and 5 per cent off list

Carriage bolts, ¾ in. x 6 in.:
Smaller and shorter rolled threads, 65, 10 and 10 per cent off list

Cut threads65 and 10 per cent off list || Longer and larger sizes..... | .65 and 10 per cent off list |
Lag bolts	70 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads.....	60 and 10 per cent off list
Other style heads	20 per cent extra
Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in.: Smaller and shorter.....	.65 and 5 per cent off list
Larger and longer sizes.....	.65 per cent off list
Hot pressed sq. or hex. blank nuts.....	\$5.50 off list
Hot pressed nuts, tapped.....	\$5.00 off list
C.p.c. and t. sq. or hex. blank nuts.....	\$5.25 off list
C.p.c. and t. sq. or hex. blank nuts, tapped.....	\$5.00 off list
Semi-finished hex. nuts:	
¼ in. to 9/16 in. inclusive.....	80, 10 and 10 per cent off list
Small sizes S. A. E.....	80, 10, 10 and 10 per cent off list
¾ in. to 1 in. inclusive, U. S. S. and S. A. E.....	70, 10, 10 and 10 per cent off list
Stove bolts in packages.....	80, 10 and 5 per cent off list
Stove bolts in bulk.....	80, 10 and 7½ per cent off list
Tire bolts65, 10 and 10 per cent off list
Track bolts, carloads.....	.3.25c. to 3.50c. base
Track bolts, less than carloads.....	.4.25c. to 4.50c.

Mill Square and Hex. Head Cap Screws

¼ in. and under..... 70 and 10 per cent off list || 9/16 in. to ¾ in..... | 70 and 10 per cent off list |

Mill Set Screws

¼ in. and under..... 70, 10 and 5 per cent off list || 9/16 in. to ¾ in..... | 70, 10 and 5 per cent off list |

Rivets

Rivets, 1c. per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs, 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$41; chain rods, \$41; screw stock rods, \$46; rivet and bolt rods and other rods of that character, \$41; high carbon rods, \$49 to \$53, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes 9/16-in. and larger, \$2.35 to \$2.50 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ¾-in. and 7/16-in., \$2.60 to \$2.75 base; 5/16-in., \$2.60 to \$2.75 base. Boat and barge spikes, \$2.60 to \$2.75 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, \$3.25 to \$3.50 base per 100 lb. Tie plates, \$2 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$11.30 per package; 8-lb. coating, 1 C., \$11.60; 15-lb. coating, 1 C., \$14.30; 20-lb. coating, 1 C., \$15.55; 25-lb. coating, 1 C., \$16.80; 30-lb. coating, 1 C., \$17.80; 35-lb. coating, 1 C., \$18.80; 40-lb. coating, 1 C., \$19.80 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars, 1.50c. to 1.65c. from mill. Refined bar iron, 2.15c. to 2.25c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/4	54½	28	1/4 to 3/8	31½	22½
1/4 to 3/8	57½	31	1/2	36½	18½
1/2	62½	48	3/4	42½	27½
3/4	66½	54	1 to 1½	44½	29½
1 to 3	68½	56			

Lap Weld			Lap Weld		
2	61½	49	2	39½	25½
2½ to 6	65½	53	2½ to 6	42½	29½
7 to 8	62½	49	7 to 12	40½	27½
9 to 12	61½	48			

Butt Weld, extra strong, plain ends			Butt Weld, extra strong, plain ends		
1/4	50½	33	1/4 to 3/8	41½	37½
1/4 to 3/8	53½	35	1/2	35½	23½
1/2	59½	48	3/4	42½	28½
3/4	64½	53	1 to 1½	44½	30½
1 to 1½	66½	55			
2 to 3	68½	56			

Lap Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
2	59½	48	2	40½	27½
2½ to 4	63½	52	2½ to 4	43½	31½
4½ to 6	62½	51	4½ to 6	42½	30½
7 to 8	58½	45	7 to 8	35½	23½
9 to 12	52½	39	9 to 12	30½	18½

To the large jobbing trade the above discounts are increased by one point, with extra discounts of 5 and 2½ per cent.

Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
1¼ in.	26½	1½ in.	5
2 to 2¼ in.	41	1¾ to 1½ in.	15
2½ to 3 in.	52	2 to 2¼ in.	25
3¼ to 13 in.	57	2½ to 3 in.	30
		3¼ to 4½ in.	32

Standard Commercial Seamless Boiler Tubes

New discounts have been adopted on standard commercial seamless boiler tubes, but manufacturers are not yet ready to announce them for publication, and for that reason we publish no discounts this week.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed		Cents per Lb.	
No. 8 and heavier.....	2.45	Nos. 13 and 14.....	2.60
Nos. 9 and 10 (base).....	2.50	Nos. 15 and 16.....	2.70
Nos. 11 and 12.....	2.55		

Box Annealed, One Pass Cold Rolled		Cents per Lb.	
Nos. 17 to 21.....	2.80	No. 28 (base).....	3.00
Nos. 22 to 24.....	2.85	No. 29	3.10
Nos. 25 and 26.....	2.90	No. 30	3.20
No. 27	2.95		

Galvanized		Cents per Lb.	
Nos. 10 and 11.....	3.00	Nos. 25 and 26.....	3.70
Nos. 12 to 14.....	3.10	No. 27	3.85
Nos. 15 and 16.....	3.25	No. 28 (base).....	4.00
Nos. 17 to 21.....	3.40	No. 29	4.25
Nos. 22 to 24.....	3.55	No. 30	4.50

Tim-Mill Black Plate		Cents per Lb.	
Nos. 15 and 16.....	2.80	No. 28 (base).....	3.00
Nos. 17 to 21.....	2.85	No. 29	3.05
Nos. 22 to 24.....	2.90	No. 30	3.05
Nos. 25 to 27.....	2.95	Nos. 30½ and 31.....	3.10

NON-FERROUS METALS

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin New York	Lead		Zinc	
	Lake	Electro- lytic		New York	St. Louis	New York	St. Louis
Sept.							
1st	12.37½	12.12½	26.62½	4.70	4.50	4.90	4.40
15	12.50	12.25	26.50	4.70	4.50	4.95	4.45
30	12.50	12.25	26.75	4.70	4.50	5.00	4.50
Oct.							
1st	12.62½	12.37½	26.75	4.70	4.50	5.00	4.50
15	12.62½	12.37½	26.75	4.70	4.50	5.05	4.55
30	12.62½	12.37½	26.75	4.70	4.50	5.05	4.55

New York

NEW YORK, Sept. 27.

The improvement in non-ferrous metal markets foreshadowed a week ago has continued during the past week with added momentum. Copper is strong with prices advancing. There has been little or no change in tin and lead, but zinc has shown an upward tendency with good buying.

Copper.—The purchase of 5,000,000 lb. of copper a little more than a week ago by a leading brass interest took out of the market most of the metal that was available at the prices paid, namely, 12.25c. to 12.37½c., delivered. Since then prices have stiffened, with 12.62½c., delivered, for electrolytic the minimum to-day (Tuesday) and some sellers are holding for 12.75c., delivery in October, and 13c. has been paid for November and December delivery. A few of the leading sellers report their idea of price for October shipment as 13c., but this has not yet been confirmed by sales. The same brass interest which bought 5,000,000 lb. a week or so ago is in the market for an additional lot of 10,000,000 lb. and there are two or three other inquiries which aggregate 5,000,000 lb. more. The fact that the brass companies are again in the market for relatively large quantities, following a period in which they have bought comparatively little, has stirred up a degree of optimism in copper circles that has been lacking for many months. Sales in September are reported to have totaled close to 100,000,000 lb., which is a decided improvement over preceding months.

Copper Averages.—The average price of Lake copper for the month of September, based on daily quotations in THE IRON AGE, was 12.19½c. The average price of electrolytic copper was 12.01c.

Tin.—On Wednesday of last week the Straits tin market was dull, practically no transactions taking place. On Thursday there was a fairly active demand from dealers, consumers showing little or no interest, but there were few sellers at any price. There were offers of 26.62½c. and 25.75c. without bringing out any tin. On Friday there was a better tone and close to 200 tons was sold at a price at or around 27c. On Monday the market was dull and Tuesday was also quiet. Tin sold during the week at 26.50c. for November delivery. London prices to-day (Tuesday) are lower than a week ago, spot standard being quoted at £156 10s.; future standard, £158 10s., and spot Straits, £157. Statistics on United States consumption in September show a total of 2605 tons, which is about the quantity that had been predicted. August consumption was 3300 tons, but preceding months of the year were much lower, averaging about 1500 to 1600 tons.

Lead.—While the lead market does not show the degree of activity noted in copper and zinc, the demand is improving and prices are holding firmly. The quotation of the American Smelting & Refining Co., 4.70c., New York, is probably the minimum, some independent producers asking a slightly higher price. We quote 4.50c., St. Louis, and 4.70c., New York.

Zinc.—A decided improvement in the demand for zinc has resulted in a stiffening of prices. Prime quality for October shipment has been sold at 4.55c. and 4.60c., St. Louis, the former price ruling on a majority of sales on Monday and Tuesday of this week.

Demand exceeds the quantity that is being produced and producers are averse to selling from their reserve stocks, which were made at much above to-day's costs, until the market is high enough to get them out without too great a loss. The principal users of zinc, including the sheet mills, brass mills and galvanizers, have all been more active in the market, not only for immediate shipment, but for November and December. For November quotations are 4.60c. to 4.65c. and for December, 4.65c. to 4.70c.

Antimony.—This metal is higher, being quoted at 5c. to 5.25c., New York, duty paid. There is a fair demand.

Aluminum.—The leading producer continues to quote 98-99 per cent virgin metal at 24.50c. per lb., f.o.b. plant, in wholesale lots for early delivery. The same grade is offered by importers at 18c. to 19c., New York, duty paid.

Old Metals.—The market continues strong and inquiries are becoming frequent. While business has not yet started, the prospects are good. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	11.75
Copper, heavy and wire.....	11.00
Copper, light and bottoms.....	9.00
Heavy machine composition.....	9.75
Brass, heavy.....	6.75
Brass, light.....	5.00
No. 1 red brass or composition turnings.....	7.75
No. 1 yellow rod brass turnings.....	5.50
Lead, heavy.....	4.20
Zinc.....	3.25
Lead, tea.....	3.00

Chicago

OCT. 4.—Copper and spelter have advanced not because of any marked expansion in demand but rather on account of greater firmness on the part of sellers. The wholesale price of antimony has also advanced slightly but this has not been reflected in the less than carload price. Old metal prices have gone up rather generally. We quote in carload lots: Lake copper, 12.75c. to 13c.; tin, 28.50c.; lead, 4.65c.; spelter, 4.65c. On old metals we quote: Copper wire, 7.75c.; crucible shapes, 7.75c.; copper clips, 7.75c.; copper bottoms, 6.50c.; red brass, 6.50c.; yellow brass, 4.75c.; lead pipe, 2.75c.; zinc, 2c.; antimony, 7c.; pewter, No. 1., 17c.; tin foil, 18c.; block tin, 20c.; all buying prices for less than carload lots.

St. Louis

ST. LOUIS, Oct. 4.—The lead market is quiet but firm at 4.50c., carlots, while slab zinc is strong at 4.50c. We quote Lake copper, carlots, at 12.74c. to 12.74½c.; tin, 27.61c. to 27.73c.; antimony, 5.73½c. In old metals we quote: Light brass, 3.50c.; heavy yellow brass, 5c.; heavy red brass, heavy copper and copper wire, 7.50c.; light copper, 6.50c.; block tin, 20c.; tin foil, 18c.; zinc, 2.75c.; lead, 3c.; tea lead, 2c. and aluminum, 9c.

Bethlehem Company Acquires Dry Dock

The Bethlehem Shipbuilding Corporation, Sparrows Point, Baltimore, a subsidiary of the Bethlehem Steel Co., Bethlehem, Pa., will take immediate possession of the plant of the Baltimore Shipbuilding & Dry Docks Co., Baltimore, recently acquired, and will operate the works in conjunction with the Sparrows Point plant. The acquired property will be used primarily for ship repair work, with the main Bethlehem plant utilized for all shipbuilding operations. During the war period, the Baltimore Shipbuilding plant gave employment to a maximum of 12,000 men. The consideration for the plant is said to be \$3,500,000.

Ferromanganese Case Hearing

WASHINGTON, Oct. 4.—The Federal Trade Commission has set Friday, Oct. 21, as the date to hear final arguments in the so-called ferromanganese anti-dumping case. The arguments are to begin at 2 p. m., and occupy the remainder of the day. Briefs in this case are to be filed with the commission on or before Oct. 15.

PERSONAL

W. S. Tower Appointed Attache—Succeeded in Bureau by Luther Becker

WASHINGTON, Oct. 4.—Walter S. Tower, recently named as the first chief of the iron and steel industrial division of the Bureau of Foreign and Domestic Commerce, has been appointed commercial attache of the bureau at London and sails to-morrow from New York to take up his new duties. He succeeds Alfred P. Dennis as commercial attache, Mr. Dennis having been named to make an investigation of agricultural conditions in Europe. Mr. Tower has been succeeded as head of the iron and steel division by Luther Becker, Montclair, N. J., who now is serving as acting chief of the division.



LUTHER BECKER

While the transfer of Mr. Tower so soon after his appointment as head of the division came as a surprise, it has been stated that he was selected with the idea in mind to send him abroad in the service of the bureau. His past experience, part of which was his connection with the Consolidated Steel Corporation, is held to qualify him specially for his new and important work as commercial attache.

The training of Mr. Becker through his official activities with the machine tool and iron and steel trades also has fitted him for work as head of the iron and steel division. He graduated in 1904 from Lehigh University with the M. E. degree and from there served a special apprenticeship course of one year in the shops of Niles-Bement-Pond Co., New York. He then became connected with F. W. Horne, Yokohama, Japan, as sales engineer, selling machine tools, hardware and heavy machinery for 25 or more of the leading machine tool builders of the United States. After serving for three years in this capacity he returned to the United States and became associated with the Bethlehem Steel Co., and was sales agent for five years of the company's St. Louis district office. Following this service, he went with the United States Steel Products Co., in its New York office as manager of the Batavia and Soerabaya offices in Java, Dutch East Indies, remaining in this position for three years, and was manager of the Tokyo, Japan, office of this company during the years 1919 and 1920.

Fritz R. Lindh, formerly chief engineer of the Graton & Knight Mfg. Co., Worcester, Mass., has joined the sales organization of the Chicago Belting Co. He was graduated from West Point in 1914. During the war he was located at Sandy Hook and Aberdeen, Md., first as a captain and later as a major. Leaving the army, Mr. Lindh was about seven months in the advertising business as an account executive for Cleland, Inc. He joined Graton & Knight in July, 1920, succeeding Dr. Wilson as head of the engineering department. For the last six months most of his time has been occupied assisting Vance McCarty in sales work. With the Chicago Belting Co. he will be in charge of its Pittsburgh direct factory branch, besides making personal engineering surveys for many of the larger users of belting throughout the United States. His address will be: Chicago Belting Co., 336 Third Avenue, Pittsburgh.

Harry W. Eastwood, who for the past four years has had charge of the steel mill and crane division of the Cutler-Hammer Mfg. Co., Cleveland branch, has been made branch manager, taking the place of Lynn

B. Timmerman, who leaves to enter the automobile business in Lima, Ohio. The Cleveland office and territory of the Cutler-Hammer Mfg. Co. continues as a part of the central district, comprising the Cleveland, Pittsburgh and Cincinnati offices and territory. A. G. Pierce of Pittsburgh is district manager and has associated with him in addition to Mr. Eastwood, R. I. Maujer as branch manager of the Cincinnati office and P. S. Jones as branch manager of the Pittsburgh office.

E. R. Spencer, formerly sales engineer Thomas Spacing Machine Co., Pittsburgh, now is connected with the Defiance Motor Truck Co., Defiance, Ohio.

K. A. Juth, American Metallurgical Corporation, Boston, spoke on "Trouble in the Hardening Room" before the Providence, R. I., branch of the American Society for Steel Treating at Providence, Oct. 5.

Edward M. Huggins, formerly assistant chief engineer Snead & Co., Jersey City, N. J., has been made chief engineer of that company. He was graduated from Lehigh University in 1900 with the degree of mechanical engineer and has been with the Snead company since 1913. Prior to that he was with the E. H. Mumford Co., maker of foundry molding machinery, for seven years, serving in various capacities, including that of chief engineer.

Walter H. Rastall, chief of the heavy machinery industrial division of the Bureau of Foreign and Domestic Commerce, left Washington October 4 for a trip which will take him to New York, Cincinnati, Indianapolis, Chicago, and Rockford, Ill., where he will confer with machinery manufacturers with regard to work of building up export trade. He will return to Washington October 15 and later will make a similar trip to other cities.

The Midvale Steel & Ordnance Co. announces the appointment of Herbert H. Moffitt as manager of sales in the Washington district, with headquarters at 1121 Woodward Building, that city. The Washington district embraces the District of Columbia, Virginia and the eastern section of North Carolina.

Richard H. Collins, formerly vice-president of the General Motors Co., and president and general manager of the Cadillac Motor Car Co., Detroit, has acquired control of the Peerless Truck & Motor Corporation, Cleveland, through the purchase of about \$4,500,000 in stock, and has been elected president and general manager of the Peerless corporation. H. A. Tremaine, formerly president, remains on the board of directors.

A. L. Jones, Jr., has been transferred to the Kansas City office of the Worthington Pump & Machinery Corporation from the Deane works at Holyoke, Mass.

Eugene A. Leinroth, formerly with the Chicago Pneumatic Tool Co. at Philadelphia, has joined the Albro-Clem Elevator Co., Cleveland.

E. E. Aldous has been appointed representative of the American Steel & Wire Co. in the St. Paul-Minneapolis-Duluth territory, with headquarters at St. Paul. Mr. Aldous has been connected with the company for 20 years in different positions.

The Peerless Drawn Steel Co., Massillon, Ohio, has appointed recently L. C. Jenkins, 1008 Lincoln Bldg., Louisville, Ky., in charge of sales throughout Kentucky, Knoxville and Memphis; Walter E. Mills, Chattanooga, Tenn., for Chattanooga and Nashville; John F. Glenn, 404 Candler Bldg., Atlanta, Ga., for that city, and C. H. Krauss, Jefferson County Bank Bldg., Birmingham, Ala., for Texas, Arkansas, Louisiana, Mississippi, Alabama, Georgia (not including Atlanta), Florida, South Carolina and North Carolina.

James A. Slater, who has been manager of sales of the National Malleable Castings Co. in Chicago, has been appointed assistant sales manager at the company's general offices in Cleveland, succeeding J. H. Redhead, who recently resigned. Mr. Slater, who was transferred from the Cleveland office to Chicago several years ago, will have charge of miscellaneous sales.

H. P. Parrock has resigned as general manager of the Lumen Bearing Co.'s plants at Buffalo, N. Y., and

Youngstown, Ohio, but remains on the Youngstown directorate. He will engage in professional work, at present at 164 Lancaster Avenue, Buffalo, covering the design and construction, but more particularly the active operation of foundries, specializing in brass foundry work. His connection with the Lumen Bearing Co. began in 1910, and he served at different times as sales manager, manager and general manager. For two years after graduating in 1901 from the Massachusetts Institute of Technology he served as assistant superintendent of the rolling department of the Pennsylvania Steel Co., and from 1904 to 1909 was superintendent of the steel foundry of the Youngstown Foundry & Machine Co.

Victor Arkin has severed his connection with the Logan Machine & Mfg. Co., Chicago.

Ira S. Snead, general sales manager Snead & Co., Jersey City, N. J., has been elected vice-president of that company succeeding the late H. P. MacDonald. Mr. Snead was graduated in 1913 from the Sheffield Scientific School, Yale University, and holds a degree of mechanical engineer.

The Eastern Fuel Co. has added to the sales force of its New York office, J. F. Whelan, formerly in charge of the Matlack Coal & Iron Corporation, offices at Newport News, Va., and Philadelphia.

OBITUARY

H. P. MACDONALD, vice-president Snead & Co., Jersey City, N. J., who died Aug. 25 at his summer home at New London, Conn., made several important inventions relative to the electrical heat treating of ferrous and non-ferrous metals by means of internal resistance and in the automotive field his inventions include a method of pre-heating gasoline by means of electrical current. He was born in Louisville, Ky., in 1880 and was graduated from the Massachusetts Institute of Technology in 1901 with the degree of civil engineer. In the same year he entered the employ of Snead & Co., serving successively as assistant superintendent, general superintendent, chief engineer and vice-president. He was a member of several societies, including the American Society of Mechanical Engineers, the American Society for Steel Treating, the Society of Automotive Engineers and the American Society of Civil Engineers.

SALMON P. JONES, for many years engaged in the foundry business in Cincinnati, died in his home in that city recently, aged 71 years. Mr. Jones was a former sheriff of Hamilton County and was prominently identified with many fraternal orders. He also travelled extensively following his retirement from active business some years ago.

EDGAR T. WARD, prominent as an iron and steel merchant and organizer both in Sheffield, England, and in the United States, died Sept. 27, at his summer home, Needham, Mass. Mr. Ward, who was 79 years of age, was born in Sheffield, where he entered the steel business, ultimately becoming a manufacturer. In 1881 he went to Boston, and two years later took up the representation of Seeborn & Diecksthal, Sheffield. In 1894 Mr. Ward in association with his son, John Ward, and George H. Nash, a steel merchant of Chicago, established the Ward & Nash Co., which was dissolved five years later, Mr. Ward continuing as representative of Seeborn & Diecksthal. In 1899 he organized the house of Edgar T. Ward & Sons, and in 1905 he founded the Union Twist Drill Co. He retired from active business in 1912 and in 1918 the Ward company was reorganized as the Edgar T. Ward's Sons Co., under which name it still operates. He is survived by his three sons, Edgar Ward, president; John Ward, treasurer, of Edgar T. Ward's Sons Co., and Asline Ward, Newton Highlands, Mass. There are five daughters.

WILLIAM R. JURACK, secretary-treasurer Standard Die Casting Co., and secretary Chas. Jurack Pattern

Mfg. Co., Milwaukee, died Sept. 25 from the effects of an operation. He was born in Milwaukee and was 35 years of age. Mr. Jurack was one of the best known figures in the Central Western pattern and die casting industries.

ANDREW G. YOUNG, traffic manager, American Sheet & Tin Plate Co., who during the war was in charge of the routing of shipments of war material for the Government, died Sept. 29 at the home of his daughter, Mrs. O. A. Locke, Cleveland, as the result of heart trouble. Mr. Young was born in Peoria, Ill., Dec. 29, 1861, and entered the railway service in 1879 as a clerk in the freight office of the Toledo, Peoria & Western Railroad. In 1899 he became traffic manager of the American Tin Plate Co. and retained that position when the American Tin Plate Co. and the American Sheet Steel Co. were consolidated and became a subsidiary of the United States Steel Corporation. He was a member of the Duquesne Club, the Pittsburgh Field Club,



ANDREW G. YOUNG

Pittsburgh Athletic Association, Pittsburgh Chamber of Commerce, the Pittsburgh, New York and Chicago traffic clubs and the Railroad Club of New York. He also was a Mason and a Shriner. Funeral services were held on the afternoon of Oct. 1, at St. Andrew's Episcopal Church, Pittsburgh, the pallbearers being Eugene W. Pargny, president; S. A. Davis, vice-president; J. I. Andrews, vice-president; J. L. Neely, assistant general traffic manager; D. M. Buck, metallurgical engineer, American Sheet & Tin Plate Co.; L. C. Bihler, traffic manager, Carnegie Steel Co.; J. F. Townsend, traffic manager, National Tube Co.; H. G. Dow, assistant general freight agent, Great Northern Railroad, New York, formerly of Pittsburgh.

OSCAR BRADFORD, president, the Expanded Metal Co., died at his home in Chicago, Sept. 28. He was born in Springfield, Ill., 77 years ago and after serving in the civil war, engaged in the jobbing and manufacturing business in St. Louis. In 1891, in Chicago, he took up the manufacture of expanded metal. He was associated with the early developments of the pneumatic tool and a pioneer in the use of concrete reinforcement. He retired from active business several years ago.

JOHN F. McELROY, president Vinton Truck Co., Vinton, Iowa, was recently killed when he came in contact with a live electric wire.

The American Chamber of Commerce in Spain plans to issue in the early part of December a special number of its monthly bulletin to foster American trade in Spain. For information one should address the American Chamber of Commerce in Spain, Rambla de los Estudios 8, Barcelona, or Eugene L. Perea, care of Boera Brothers, Staten Island Ferry Terminal Building, New York.

Traffic handled by the Ohio region of the Erie Railroad averaged 4780 loaded cars per day in September, the best monthly record this year, indicating improved industrial conditions in affected territory. The best daily record for the Ohio region this year was on Sept. 28, when the loaded cars moved totaled 5692.

Practical applications of autogenous welding in the steel mill will be discussed by Walter Petry, superintendent of welding, American Rolling Mill Co., Middletown, Ohio, at a meeting of the Cleveland section of the Association of Iron and Steel Electrical Engineers to be held on Monday evening, Oct. 10, at the Hotel Statler, Cleveland.

British Iron and Steel Market

Greater Activity All Along the Line—Continental Competition Hampered by Slow Deliveries—Tin Plate Demand Better

(By Cable)

LONDON, ENGLAND, Oct. 4.

Eighteen Cleveland furnaces are now in blast. The general pig iron situation is unaltered, consumers buying only from hand to mouth. Hematite buying was stimulated by recent cuts, but there were no substantial sales resulting from it.

Foreign ore is dull, the best grade of Rubio selling for 28½s. (\$5.33) ex-ship Tees.

Steel consumers generally are awaiting lower prices, but the sheet business is improving, owing to delays in Continental deliveries. The general position is, however, still poor. Dorman, Long & Co., Ltd., the Consett Iron Co., Ltd., Wm. Beardmore & Co., Ltd., and the Lanarkshire Steel Co., Ltd., are all closed down.

Northeastern steel workers' wages have been reduced 25 per cent, under a sliding scale.

The Clyde shipbuilding output for September was fourteen vessels, totaling 42,942 gross tons register.

There is a fair inquiry from the Far East for Continental steel, but British merchants are experiencing difficulty in placing orders in Germany. Quotations are practically unchanged.

French merchant bars are held at £8 10s. to £9 (1.42c. to 1.50c. per lb.) f.o.b.; Belgian merchant bars are quoted at £8 7½s. to £9 (1.40c. to 1.50c. per lb.) f.o.b.; both for shipment in six to eight weeks. German merchant bars are offered at £9 (1.50c. per lb.) f.o.b., with shipment date unspecified.

French beams are held at £8 5s. to £8 10s. (1.38c. to 1.42c. per lb.) f.o.b. German thick plates are quoted

at £8 5s. (1.38c. per lb.) f.o.b.; ¼-in. plates at £8 10s. to £9 (1.42c. to 1.50c. per lb.) f.o.b., for shipment in six weeks. German wire nails are now to be had at 23s. (\$4.30) per picul (133½ lb.) keg—equivalent to 3.22c. per lb.—cost and freight to Japan.

Continental pig iron is stiffening, Luxemburg producers being booked for October shipment, and quoting £4 7½s. to £4 10s. (\$16.36 to \$16.83) f.o.b. for November shipment.

Tin plates show an improvement in demand. More mills have been put into operation. Several works have accepted low figures to start up, 20¼s. (\$3.79) basis f.o.b. having been done for November and December. Sellers are now asking 20½s. (\$3.83).

Buyers of Continental sheet bars are canceling contracts, owing to delayed deliveries. There is more business in galvanized sheets, but prices are weak, less than £18 (3.01c. per lb.) basis f.o.b. having been accepted.

We quote per gross ton, except where otherwise stated, f.o.b. maker's works, with American equivalent figured at \$3.74 per £1 as follows:

Durham coke, delivered...	£1 15	\$6.55
Cleveland basic	7 7½ & £7 10*	27.58 & \$28.05
Cleveland No. 1 foundry...	7 0	26.18
Cleveland No. 3 foundry...	6 0	22.44
Cleveland No. 4 foundry...	5 19	22.25
Cleveland No. 4 forge....	5 17½	21.97
Hematite	7 0*	26.18
East Coast mixed.....	6 10	24.31
Ferromanganese	16 0 & 14 0*	59.84 & 52.36
Rails, 60 lb. and up.....	10 0 to 14 0	37.40 to 52.36
Billets	7 10 to 8 0	28.05 to 29.92
Sheet and tin plate bars,		
Welsh	8 0 to 8 10	29.92 to 31.79
Tin plate base box.....	1 0½ to 1 2	3.83 to 4.11
		C. per Lb.
Ship plates	12 10 to 14 0	2.09 to 2.34
Boiler plates	18 0 to 19 0	3.01 to 3.17
Tees	12 10 to 14 10	2.09 to 2.42
Channels	11 15 to 13 15	1.96 to 2.30
Beams	11 10 to 13 10	1.92 to 2.25
Round bars, ¾ to 3 in....	12 0 to 12 10	2.00 to 2.09
Galvanized sheets, 24 g....	18 0 to 18 10	3.01 to 3.09
Black sheets	16 0	2.67
Steel hoops	14 5 & 14 0*	2.38 & 2.34
Cold rolled steel strip, 20 g.	26 10	4.42

*Export price.

Steady But Gradual Improvement

LONDON, ENGLAND, Sept. 21.—Generally speaking conditions in the iron and steel trades improve only very gradually. During the past fortnight works have certainly secured a few more orders, which enable them to keep going, and in some instances to re-open, but the world demand for steel is still a long way behind that of normal. Cutting for export of course goes on from week to week, but prices are still far too high for overseas buyers to take any considerable interest, especially as the Continent has been under-quoting us for some months past.

But here too the position is an obscure one. Germany has heavily committed herself and has now practically withdrawn from the market except for one or two items, after forcing prices up. This step enabled French, Belgian and Luxemburg producers to raise prices also, but certain overseas buyers, notably the Far East, who have been making fairly steady purchases, have become frightened by the rise and are withholding.

There is no doubt that it is the instability of world prices of steel generally that is hindering business, which, of course, are in the main due to the high cost of production. The seriousness of the position has been fully understood by at least one large steel works, Guest, Keen & Nettlefolds, Ltd.; to give employment while the slump lasts, this company has re-opened one or two plants to tide the men over the crisis.

It is interesting to note that experiments have recently been made with a new fuel, and two of our railroads, which had already experimented with locomotives fitted with oil burners, are now engaged on adaptations for a fuel which consists of compressed coal dust and crude

oil. It is understood that no special burner is required and that an ordinary locomotive fire box can be used without any special alterations. In connection with railroads, a long needed step is being taken in the way of getting freight rates down, and conferences are being held with a view to reducing the rates, mainly of essential raw materials, by no less than 10 per cent on the existing level of charges. A further meeting is to be held next month when it is expected a final decision will be announced.

Three-Shift System in British Iron Works

The three-shift, or eight-hour, system has proved a failure in the iron works of the Newcastle (England) district, according to a report of the Board of Conciliation and Arbitration for the iron and steel trade in the north of England. The system was introduced in the iron works at the beginning of 1919, but Vice Consul Brooks reports from Newcastle that instead of promoting increased output without increase of cost, the output has decreased and costs have risen very considerably.

Farm Implement Prices Reduced

The International Harvester Co. has announced reductions ranging from 10 to 20 per cent in the prices of practically all farm implements and machinery, effective Oct. 1. Reductions of 10 to 15 per cent were made in March and April and tractor prices were reduced in July.

Reductions in freight rates and cuts in rates of railroad employees' wages are demanded by the National Industrial Traffic League, whose membership comprises many of the large industrial enterprises of the country.

France Exports Most of Lorraine Steel

Impressions Gained on Recent Tour of the Iron and Steel Institute—Use of Blast Furnace Gas for Power the Outstanding Feature in Lorraine

(Special Correspondence)

LONDON, Sept. 17.—The excursions of the Iron and Steel Institute last week to many of the leading iron and steel plants in France gave a good insight into the present condition of the industry, though the time allowed for the various visits was too short for detailed study. This was especially the case as regards the Lorraine district, where a very full program of visits had been arranged, involving long journeys by automobile.

Blast Furnace Gas Engines Everywhere

No particular changes in practice appear to have been introduced in the Lorraine works now under French ownership, and many of the foremen speak German and nothing else. Under present trade conditions it is no doubt the best policy to defer any changes that may be contemplated and to make the most of the existing plant as it stands, retaining those members of the staff who are familiar with the more important operations.

The most impressive feature of the blast furnace plants to the English visitor was the thorough utilization of the gas, involving extensive cleaning plant. A power house full of large blast-furnace gas engines is as much standard practice in Lorraine as, say, water-cooled tuyeres elsewhere. Only one steam engine was seen during the whole of the Lorraine trip.

The French View of Germany

On the excursions, as at the business sessions in Paris, no opportunity was neglected of presenting to the English visitors France's point of view on international politics. It was done very cordially, with quiet and logical argument, and with all the signs of organized propaganda. No offense could be taken at this unorthodox addition to the lavish hospitality and friendly reception accorded by our French hosts. Indeed it cannot be denied that it provoked much sympathy and a better understanding of the French point of view, and to that extent served a most useful object. If one cannot agree with his friends on certain subjects, it is at any rate a good thing to understand the prime reasons for the difference.

It must be admitted, as frankly and as cordially as their hosts put their case, that the visitors were not convinced of Germany's sinister intentions regarding a new war of re-conquest. Nor was the British ironmaster, deeply involved in troubles of his own, convinced of his ability to aid in the economic restoration of the French industry or even of the urgent necessity for any such aid. The war damage and devastations were certainly impressive, but there are other factors which appealed to thoughtful and observant members. Where reconstruction is needed to meet the requirements of current trade, such reconstruction appears to have been rapidly accomplished, as, for example, in the magnificent new pipe foundry at Pont-à-Mousson. The Marine and Homécourt steel works, on the contrary, are practically as left by the Germans—completely devastated. The product of these works can be supplied from other plants, which are able to meet a bigger demand than now obtains, and in the circumstances it is not surprising that reconstruction is postponed.

Much Lorraine Steel Exported

France, in fact, is working for export, and some-

thing like 95 per cent of the output of the Lorraine and Luxemburg works is said to be sent out of the country. It is believed that the ex-German works of Lorraine were acquired on exceptionally good terms, and they are not standing idle. British visitors could not unreasonably draw the conclusion that the complete restoration of the French industry depends far more on the restoration of the world's trade than on anything else, and that, as far as current business is concerned, France is probably in a better economic position than Great Britain. As to the future, France probably has it in her power to attain a dominating position in the iron and steel trade of the Eastern hemisphere, if she devotes her energies to the full development of the magnificent resources now in her possession.

These are the impressions of the present writer, gathered during an admittedly short visit which may quite possibly have led to mistaken conclusions. They are, apparently, not quite the impressions which it was hoped would be received by the visitors, but are recorded for what they are worth, and they do not differ substantially from the impressions of the majority of the English visitors. Of the personal friendliness, cordial welcome and magnificent hospitality accorded, both by the reception committee and the members of the various firms whose works were visited, one cannot speak too highly, and many happy memories will be treasured of the visit of the Iron and Steel Institute to France.

Hayange

Coming now to the Lorraine excursion, the party first visited the Hayange works of De Wendel & Cie., which have been the property of the De Wendel family since 1704. There are two groups of blast furnaces, four being at Hayange. Of these, two are of 200 tons capacity and two of 150 tons. The latter will be replaced by two new 200-ton furnaces. At Paturel there are six blast furnaces, two of 180 tons and four of 225 tons. The basic plant, built in 1880, consists of six converters, and it may be mentioned that Hayange was the first works in Lorraine to adopt the Thomas-Gilchrist process. There are two blooming mills and five stands for rolling rails and girders, and a press for sleepers. The open-hearth plant was built between 1903 and 1910, and consists of four 60-ton furnaces, a fifth being under construction. There are also plate and sheet mills and a galvanizing shop. The Moyeuivre works are some miles away, and comprise eight blast furnaces, four basic converters, rod and bar mills, and two batteries of coke ovens with by-product plant. The company obtains its ore from mines in the neighborhood and also from Briey. The local ores are brought to the Hayange blast furnaces through a tunnel 2½ miles long, driven under the hill. Liquid air cartridges are used in mining, as they permit rapid access to the working face after blasting.

The company owns collieries at Petite-Rosselle, where there are six double shafts and where the output in 1913 was 2,209,765 tons. They also own a new colliery at Hamm, in Westphalia, the 1913 output of which was 550,000 tons. Most of this was converted into coke in four batteries of 50 coke ovens. The blast furnaces were using Westphalian coke at the time of the visit. The company has interests also in collieries

in Dutch-Limburg, Belgium, and the north of France. The coke ovens near the Moyeuve blast furnaces were started in 1913, and were the first in Lorraine. Tar and ammonium sulphate are recovered and gas is supplied to a part of the surrounding district.

German Ownership Frustrated

In 1913 the Hayange works produced 847,000 tons of pig iron and 773,000 tons of steel, and the company had 22,297 employees in its Lorraine works. During the war the property of the company was sequestered and administered by the German civil and military authorities, who ordered liquidation. In 1918 judgment was given in favor of a German purchasing syndicate, but the end of the war intervened. The works of Hayange and Moyeuve, which were completely stopped at the time of the armistice, were partly restarted at the beginning of 1919, but were handicapped by inadequate supplies of coke. At present nine out of the 18 blast furnaces are at work.

Practically all the equipment at Hayange is of German make, and was presumably installed before the war. Up-to-date bunkers, electric transfer trolleys, and skip-charging are features of the blast furnace plant, of which the layout is excellent. The casting houses are arranged between the furnaces, served by overhead electric cranes and electro-magnets. Trolley ladles for slag and metal are provided with hydraulic tilting gear. Blast pressure is 500 mm. of mercury (about 10 lb.). At each tap 40 tons is teemed into two ladles and 20 tons on the pig beds. The foundry iron runs 3.0 to 3.5 per cent silicon, while for the steel works they use metal with 0.5 to 0.7 silicon and 0.09 sulphur. The sulphur seems on the high side for British practice. The mud gun is used at the tap hole. Stoves have their own stacks. Slag-granulating plant is provided at each furnace, but no granulating was being done at the time of the visit. Three large power stations supply the Hayange and Moyeuve works with blast and electric power, using gas engines of the Nürnberg type.

In the Bessemer shop there are six 13-ton converters and three semi-circular casting pits, one casting ladle serving a pair of converters. The arrangements at the Joeuf works were rather more modern, car-casting being adopted, while the most advanced practice was seen at Hayange.

The steel mill was well arranged and equipped, but presented no special features. A fair amount of work was going through, mostly I-beams, channels and angles of various sections, and some rails. An hydraulic press was working on steel railroad sleepers.

During the greater part of the war the works were run by the Germans at about 30 per cent capacity.

Joeuf

After the annexation of Alsace-Lorraine by Germany in 1870 the Hayange and Moyeuve works were outside the French customs frontier and the De Wendels and the Schneider interests founded the Joeuf works, which began operating in 1880. At the end of 1913 they comprised eight blast furnaces (four of 200 tons and four of 140 tons), a basic plant of six converters, a blooming mill, a two-high mill for rails and girders, a billet mill, and a wire mill. A three-high mill of 650 mm. was under construction. Joeuf was occupied by the Germans from Aug. 2, 1914, to Nov. 17, 1918. The works were thoroughly devastated, and the huge lump of iron used to smash the rolling mills is now to be seen on a pedestal at the works' entrance. It has been playfully named Fritz.

Reconstruction began after the armistice. Two blast furnaces were restarted in June, 1919, and the steel works and blooming mill in July, 1920. Now four furnaces are in blast, two are ready for blowing in, and the other two will be ready very shortly. The steel

works were restarted on June 8, 1920, the blooming and wire mills are in operation, the rail and billet mills are nearly ready, and the new three-high 600 mm. mill is quite ready. In 1913 the works produced 394,000 tons of pig and 330,000 tons of steel. The wire mill was in full operation at the time of the visit, and the general layout gave an excellent impression. Gas-fired continuous billet heating furnaces were installed. The billet heating furnaces seen later at Hagondange were also of the continuous type, but semi-gas fired (coal fires with steam-forced draft). The latter were engaged on heavier work and had special arrangements for handling the hot billets which were very effective in operation. The billets were withdrawn by a winch and tongs on a rising and falling table in front of the discharge door of the furnace. The table is then lowered to below floor level (trap door plates closing automatically over it), and transfers the billet to line rollers under the floor which take it to the three-high rolls. For heavy billets, especially when the reheating furnaces are so grouped as to make a clear floor almost imperative, this system is excellent, and at Hagondange it served to keep the rolls continually supplied without a hitch. Such elaboration was not, however, needed at Joeuf.

De Wendel & Cie have a works at Messempré, in the Ardennes, for rolling high grade thin steel sheets. This plant, completely destroyed during the war, is under reconstruction.

Homécourt

The works of the Compagnie des Forges et Acieries de la Marine et d'Homécourt afforded a striking example of devastation. Although reconstruction has been begun, it is very little advanced, and there was little to show the visitors except a roof and excavations for mill housings, etc. There were originally seven blast furnaces, of which nothing but the shells were left by the Germans. Out of the 29 Cowper stoves, 25 were pillaged and four totally destroyed. The gas engines and electric generators of the central power station and the rolling mill engines were removed. The steel department of four 17-ton Bessemer converters and the rolling mill building were utterly destroyed, even the foundations having been undermined and the superstructures brought down.

The reconstruction scheme includes the laying down of a large blooming mill, a Morgan billet mill, and a universal mill for large plates up to 1200 mm. Two of the blast furnaces have been restarted. In the blast furnace power house, blast and electric power were provided by two large gas engines by the Société Alsacienne de Constructions Mécaniques, of Mulhouse, while in the central power house six gas engines by Erhardt & Schmer, of Saarbrücken, were driving electric generators. Presumably these engines had been recovered from Germany.

Droitaumont Iron Mines

The iron mines of the Société des Mines de Droitaumont are in the Orne district of the Lorraine ore field. The pit was sunk in 1910 and the ore is obtained from the gray seam. It is freely calcareous and contains 34 to 40 per cent of iron. The depth of the shafts averages about 600 ft. and a good deal of water is encountered from time to time. The 1913 output was 404,687 tons. The pit-head arrangements are very up-to-date, with powerful tipplers and modern arrangements for circulating the tubs.

Hagondange

The Hagondange works were built by Thyssen between 1911 and 1914, and are among the most modern in Europe. They were acquired after the war by the Union of Consumers of Metallurgical Products and Industries. They extend over 1250 acres and comprise six 300-ton blast furnaces, five 30-ton converters, one 80-ton tilting open-hearth furnace and one of 60 tons, two electric furnaces of 10 tons each and one of 18 tons. The annual capacity is 600,000 tons of steel, and the number of workmen employed is 6000. All the blast furnace gases are cleaned for power purposes. There-

are 12 Thyssen gas engines and 12 gas blowers, the blast pressure of 600 mm. of mercury (about 12 lb.) being the highest in the district. At the time of the visit the dry-cleaning plant was not being used, owing to the amount of moisture in the gas, which was put through Thyssen washers. In the Bessemer shop, the casting arrangements were reminiscent of open-hearth practice. Overhead casting ladles run the whole length of the shop, and the car-casting system is employed in straight pits above ground level, running out at right angles to the furnace platform. Passing the soaking pits, the visitors were impressed by a very powerful electrically-driven blooming mill. The billet reheating furnaces have been noted above. Throughout the works every mechanical device was adopted for the expeditious handling of materials. The company owns nearly 14,000 acres of iron ore concessions in Lorraine, with an annual productive capacity of $1\frac{1}{2}$ million tons. A picturesque garden city adjoins the works and houses nearly 3000 of the employees.

Rombas

The Rombas steel works were originally founded in 1888 by a German company, the Rombacher Huttenwerke, owning iron ore mines in Lorraine, coke ovens in Zeebrugge, and collieries in Westphalia. In 1913 the works produced 770,000 tons of pig iron and 610,000 tons of steel, and the steel capacity has since been increased by another 300,000 tons. In October, 1919, a combine of the Compagnie des Aciéries de la Marine et d'Homécourt, the Société d'Aciéries de Micheville, and the Société des Hauts-Fourneaux de Pont-à-Mousson formed the Société Lorraine des Aciéries de Rombas and purchased the works for 125,000,000 francs. This new company, in association with a powerful group of Belgian iron works and banks, also acquired the Deutsch Luxemburgische works at Differdange and Rumelange, and controlling interests in the Dillingen works. The group also controls a large number of iron mines in Lorraine.

The Rombas works has eight blast furnaces arranged in line, the first four being of 170 tons each, Nos. 5, 6 and 7 of 225 tons each, and No. 8 of 250 tons. The first four have vertical hoists; 5, 6 and 7 have skip charging, and No. 8 has an inclined hoist. The last named is 730 cu. m. in capacity, 30 m. high, and has eight tuyeres. There are eleven gas-driven blast furnace blowing engines totaling 4810 hp. The gases are

cleaned by alternating dry and wet Silesian purifiers, Scheile & Schwartz fans and purifiers, and Theisen scrubbers. There are two 1250-ton mixers, six 32-ton converters, and preparations are being made to erect four 70-ton tilting open-hearth furnaces. The installation of rolling mills is extensive and powerful. The company also owns four 200-ton blast furnaces at Maizières, which is connected with the Rombas works by an 8-kilometer (5 miles) private line, enabling molten pig to be brought to the mixers.

A visit was also made to the blast furnaces and foundries of the Société de Pont-à-Mousson, where the vertical casting of large iron pipes is a specialty. Some account of these works is reserved for a future communication. Another party visited the Creusot and St. Chamond works, while a third inspected the modern blast furnaces and steel plant near Caen, in Normandy.

Luxemburg Plants

A small group of members made a trip into Luxemburg, which was not featured on the official program. They visited the works of the Société Metallurgique des Terres Rouges in which Schneider & Co. now have the largest interest, but which were formerly the property of the German Gelsenkirchen Co. The new company has 15 blast furnaces in three districts, with basic converters and rolling mills, having a total capacity of 1,000,000 tons of steel per annum. The works of the Arbed company were also inspected, the name being an abbreviation of Aciéries Réunies de Burbach-Eich-Dudelange. The company owns 14 blast furnaces in two localities, with basic Bessemer and open-hearth plants, rolling mills and foundries. This company is also connected with works at Dommeldange, where there are three blast furnaces, steel works, foundries and structural shops, and also with blast furnaces, steel works and mills at Esch-sur-Alzette.

The Luxemburg plants are a splendid addition to France's metallurgical resources, mention of which was apparently overlooked in the speeches at Paris and those members who availed themselves of the opportunity of visiting them must feel grateful for the privilege. It is understood that France is exporting somewhere around 2,000,000 tons, or practically the whole of the steel produced in the Lorraine and Luxemburg works, formerly owned by the Germans and acquired at a low valuation.

German Prices Go Higher as Mark Depreciates

Low Value of Mark, Increased Coal Prices, Wage Claims
and Prospects of Freight Advance Main Causes of Rise

(By Aerial Mail to London)

BERLIN, GERMANY, Sept. 16.—The period of calm that followed the frenzied increasing of prices lasted only a few days. Prices continue upward, almost in proportion to the decrease in value of the mark. The tone of the market, however, has become a little quieter and as not all of the peak prices quoted by jobbers a fortnight ago could be maintained, warehouse quotations are now showing but a small margin over the mill prices. The slight retardation in the upward trend of works prices has been caused by the fact that mills are booked for months ahead and in most cases are declining new orders. In view of the continued depreciation of the mark, the increase in the price of coal wage claims by labor and an expected advance in freight rates, it is difficult to foresee an end to the present upward trend of prices.

Scarcity of Light Plates

Pig iron No. 3 has advanced 50 m. per ton and is now quoted at 1250 to 1300 m. f.o.b. Lorraine or Luxemburg furnace. The semi-finished material market is virtually unchanged; billets, open-hearth, being quoted at 2100 to 2400 m., Bessemer 2000 m., average, and the same price has been named for sheet bars. In the finished iron and steel market, there is an extraor-

dinary scarcity of light plates. Supplies of plates are difficult to obtain as the Siegerland mills are sold out for the next five months, and the situation is further aggravated by the strikes in the Siegerland district. Jobbers are asking 3700 m. per ton, and get it, but the works quotation is about 3500 to 3550 m. The Black Sheet Association offers medium sheets at light plate base prices and few works are willing to quote lower prices. The strongest tone prevails in the wire market where steel wire prices have rapidly advanced. The Association of Steel Cable Manufacturers has announced a further increase of 40 to 50 per cent on all grades as from Sept. 7, when wire for cable No. 14 U. S. Steel gage was quoted at 7350 m. compared with the former price of 5320 m., and No. 20 gage 9250 m. (former price 6280 m.). In addition, the surcharge on galvanized wires was increased 800 m. per ton. There is considerable irregularity in the cold rolled hoop iron market, some makers quoting 410 m. per 100 kg. while others name 530 m. Bar iron is rather firm and most mills are turning down inquiries. During the past few days there has been substantial export buying, light rails, bar iron, wire rods, and drawn wire being especially in demand. Bar iron has been quoted at 98 to 100 florins f.o.b.

German or Dutch port, while quotations on medium sheets were in the neighborhood of 105 florins.

During the past week quotations were as follows, per metric ton, unless otherwise stated:

	Marks
Bar iron	2800
Structural shapes	2650
Tees and channels	2550
Z-iron	2580
Squares and rounds	2750 to 2850
Half round iron	2800 to 2900
Angles	2800
Flats	2750
Concrete bars	2800
Hoop iron:	
Hot rolled	2850
Cold rolled	4500
Annealed, for packing	4000
Galvanized	5800
Wire rods	2800
Wire, bright	4000
Wire, galvanized, according to grade	4400 to 4550
Rails, steel	2350
Sheets:	
Heavy	2400
Medium	2800
Double planished	3800 to 4300
Galvanized, per 100 kg.	500 to 600
Plates:	
Light	3600
Tank	2600
Blooms	2050
Ingots	1750
Pipe	
Boiler tubes:	
2 3/4 in.	20.00
3 1/2 in.	40.00
Gas pipe:	
3/4 in.	4.80
1/2 in.	8.00
3/4 in., galvanized	9.85
1 in., galvanized	20.00

Pig Iron Prices Unchanged

The Association of Corrugated Flue Tube Manufacturers has revised prices as from Sept. 1, as follows: Boiler plates, bottoms 2640 m.; tubes for stationary boilers 7100 m.; for ships' boilers 7600 m.—all per metric ton, f.o.b. Essen. At a recent meeting of the Pig Iron Syndicate it was decided to leave the present maximum prices for pig iron unchanged until the end of October.

Metal Position in France

NANCY, FRANCE, Sept. 15.—In heavy bars and other semi-finished material there are numerous foreign inquiries. Pig iron is extremely active and large tonnages have recently been exported to the United Kingdom.

Buyers are complaining that there is too great a difference in the prices of various mills on rolled bars. Lorraine mills offer rolled bars at 39 fr. less 2 per cent whereas other districts quote 63 fr. per 100 kg. for the same quality, the average price being from 41 to 55 fr. per 100 kg. Location of the mill and its distance from mines are responsible for these price differences.

Speculators were responsible for the latest upward movement in the prices of finished material. Thomas pig iron is decidedly improved, showing an increase of 12 fr. per ton. Foundry iron is quoted from 181 to 186 fr. per ton, according to origin. In Longwy, one producer has offered foundry iron at 175 fr. per ton, on a 50 ton inquiry, payment at 30 days from date of invoice. Hematite is fixed at 400 fr. per 1000 kg.

Rails Awarded Belgian Firm

WASHINGTON, Oct. 4.—The Belgian steel manufacturing firm of Ougrée Marihaye has been awarded the contract to furnish 3000 metric tons of steel rails and 8000 pairs of fishplates for use in the construction of the Tangier-Fez railroad in Morocco at 398 French francs per ton for the rails and 478 French francs per ton for the fishplates, f. o. b. port of Kenitra, Morocco, according to Consul General Maxwell Blake, Tangier. Other bidders included four French, one Spanish and two English interests, no American interest having submitted figures.

The Northfield Knife Co., Litchfield, Conn., has filed a final certificate of dissolution.

ITALY'S NEW DUTIES ON STEEL

Higher Rates Imposed Against Countries Which Have Raised Their Tariffs

(Special Correspondence)

MILAN, ITALY, Sept. 10.—The new Italian tariff which was very suddenly put into effect by the Government on July 1, though it had been under discussion since 1917, revised all items and greatly increased the number of dutiable products. It has 953 headings, or more than double the number contained in the old tariff issued in the year 1887. Each of the 953 divisions includes several subdivisions covering the various forms of products, so that it is very difficult for an article to escape the duty. More than 3000 different articles are specified. Especially detailed are the schedules in the important section of "metals, products of the metallurgical and mechanical industry, implements and vehicles." In the old tariff this section included only 64 paragraphs, while in the recent one it includes 269.

The duty a commodity must pay when entering Italy is indicated in the new tariff by two combined figures: the first figure shows simply the duty, the second figure shows the "coefficiente di maggiorazione"; that is, the number stating how much the duty must be increased. For instance:

For steel ingots an import duty of 30 lire per metric ton is indicated, with 0.8 as "coefficiente di maggiorazione"; which means that ingots pay 30 plus (30 x 0.8) = 54 lire per ton. Motorcycles pay a duty of 120 lire, and the coefficient is 1, therefore the full duty is 240 lire for each motorcycle. A gold watch pays 1.50 lire plus a coefficient of 2, making a total of 4.50 lire for each watch.

It is evident that the new tariff has been created with the purpose of protecting domestic manufacture, and this is the real reason for the complicated system of the coefficients. While the first figure (duty) will remain unchanged, the coefficients are subject to revision any time the conditions of production and international commerce may require it. In other words, the coefficients can be increased or decreased according to the greater or less need of protecting the national industries and the special agreements which may be entered upon with the other countries.

This new system of adding the coefficient to the duty has been suggested by the urgent need of a basis to work on in dealings with countries which lately have increased their tariffs. It can be considered a mild form of countervailing duties against countries which have imposed heavy import duties on Italian products; at the same time it is designed to come to the help of domestic industry which at the present time is badly shaken by the world crisis and not in a position to fight foreign competition. Practically all of the pre-war treaties of commerce with other countries are now inoperative, as they have been so much modified by special decrees, limitations, import prohibitions, etc., that the need to arrange for new treaties is apparent.

In the trade relations between America and Italy it is evident that if Italy can obtain friendly treatment from the United States for her export products, such as oil, lemons, essences, silk, etc., the coefficients on American export products, such as iron, steel and machinery, will be considerably lowered. It must be borne in mind that the new tariff is not at all final, because the coefficients are subject to revision.

All duties must be paid in gold lire. As there are now no gold lire in Italy, payment can be effected in paper lire at the day's rate of exchange for gold. This rate of exchange is fixed every fortnight by the Ministry of the Treasury on the exchange of the dollar. For the fortnight Aug. 15 to Aug. 30 the gold lira stood at 452 per cent of the paper lira. Therefore,

the duty on steel ingots being 54 gold lire, amounted in paper lire to 4.52 times 54, or 244.08.

It will be interesting for American exporters to know the present import duties on the main items of iron and steel shipped to Italy from the United States. They are as follows:

	Duty in Gold Lire per 100 Kilos	Coeffi- cient	Total Duty. Lire per 100 Kilos
Iron, manganese, lead, copper, zinc ores	Exempt		
Pig iron for foundry or steel manufacturing purposes	1.25	2.5	4.375
Pig iron, when containing more than 15 to 25 per cent Mn.	1.75	2.5	6.125
Metals for ferro-alloys (chrome, manganese, molybdenum, silicon, titanium, tungsten, vanadium) 90 per cent or more	40.00	0.5	60.00
Puddled iron	3.00	0.8	5.40
Ingots steel	3.00	0.8	5.40
Blooms and sheet bars	7.00	0.5	10.50
Steel rails	7.00	1.0	14.00
Scrap Material			
Steel and iron scrap of any kind but for remelting purposes	1.00		1.00
Tinned scrap for detinning purposes	Exempt		
Steel and iron turnings, drillings and borings	1.00		1.00
Crop ends, rail ends, discard blooms and billets, old axles, shafting, etc., when in pieces not exceeding 500 mm. length	3.00	0.5	4.50
Cast iron scrap	1.00		1.00

Steel bars, plates, tubes, etc., pay duties varying from 12 to 30 gold lire per 100 kilos, according to thicknesses or degree of manufacture.

Reduced Export Rates on Shipments to the South

WASHINGTON, Oct. 4.—Effective on Thursday of the present week, export rates on iron and steel products for shipment through South Atlantic and Gulf ports will be lowered approximately 20 to 25 per cent. By permission of the Interstate Commerce Commission authority was granted to reduce them on the same basis as were those from the same points of origin to North Atlantic ports, the latter becoming effective Sept. 6. The latest decrease was authorized upon application of the carriers, which were authorized to establish the new rates upon five days' notice. Prior to the reductions effective Sept. 6 the rates to South Atlantic and Gulf ports were slightly under the New York and other North Atlantic ports, due to the 40 per cent advance last year to the latter points and the 33 1/3 per cent advance to the former points.

Indicative of the former and new rates to South Atlantic and Gulf ports are the following:

From	Finished Steel in Cents per 100 Lb. to South Atlantic Ports		Billets in Gross Tons (To South Atlantic Ports)		Pig Iron in Gross Tons (To South Atlantic Ports)	
	Former Rate	New Rate	Old	New	Old	New
Youngstown, O....	40	31.5	\$6.665	\$5.30	\$6.40	\$5.10
Toledo, O.....	46.5	37	7.865	6.20	7.465	5.90
Indianapolis, Ind..	56	44	9.335	7.30	8.935	7.10
Pt. Wayne, Ind....	54	43	9.065	7.10	8.665	6.80

	Billets in Gross Tons to Gulf Ports				Pig Iron in Gross Tons to Gulf Ports			
	Old Rates	New Rates	Old Rates	New Rates	Old Rates	New Rates	Old Rates	New Rates
Chicago ..	\$10.00	\$8.40	\$7.90	\$6.70	\$9.60	\$8.00	\$7.60	\$6.40
Peoria, Ill..	9.465	8.40	7.90	6.70	9.465	8.00	7.60	6.40
St. Louis...	8.265	8.265	7.90	6.70	8.265	8.00	7.60	6.40
Cincinnati.	8.125	7.875	7.90	6.70	7.875	7.50	7.60	6.40

*A—When for countries other than Europe and Africa.

†B—When for Europe and Africa.

Hearings on the application of transcontinental lines to lower rates on iron and steel for export through Pacific coast ports and to reduce eastbound rates on canned goods and other articles will be begun on Nov. 11. The hearings are the result of protests against this particular application by intermountain shipping interests.

A New Britain, Conn., branch, American Society of Mechanical Engineers will be organized this week and officers elected.

PLEA FROM PACIFIC COAST

Need of Protection for Steel Industry Urged in Letter to Senate Committee

John Williams, labor commissioner of the Pacific Coast Steel Co. has forwarded to the Committee on Finance, United States Senate, Washington, the following brief in favor of a protective tariff, based on the American valuation plan:

"We beg respectfully to direct your attention to a condition affecting the steel industry on the Pacific Coast which, in our opinion, challenges the future existence of this industry in this particular section of the United States, viz., the importation of German and Belgian steel products.

"Indicative of the situation confronting us, we desire to bring to your attention the fact that this company has two plants, one located in Seattle, Wash., and one in South San Francisco, neither of which is the product of war-time conditions, but the outgrowth of steady development during the past 20 years, and which we believe are capable of meeting the needs of the territory which they are now serving.

"The progress made by the Pacific Coast Steel Co. since its inception has been coincident with the growth and expansion of the states on the Pacific slope and contiguous states. The demand for tonnage, however, is limited and compared with large steel manufacturing plants our production is small, which in turn means that the cost of steel making on the Pacific Coast is higher than at Eastern plants where the larger demands enable them to maintain quantity production. Future progress is now seriously threatened through the menace of foreign importations, principally emanating from Germany and Belgium.

"German steel bars are being quoted on the Pacific Coast at this time on the basis of \$1.65 per 100 lb., and orders have been placed at a price approximately of \$1.70 per 100 lb. The reason larger tonnages of bars have not been placed by Pacific Coast buyers with German and Belgian mills is because of curtailment in the requirements of steel here, which condition has been prevalent during the past year. It is evident, however, that as conditions in the steel market become normal, with the consequent spread in prices between our costs and the price at which foreign steel can be bought, it is only a question of time until the entire Pacific Coast will be flooded with these importations, which can only mean the elimination of steel plants now operating in this section, and the throwing out of work of men engaged in this industry, which necessarily follows, will accentuate the suffering now existent due to unemployment.

"The low prices being offered by German and Belgian interests can largely be attributed to long hours and low labor rates paid in those countries, together with depreciated currency, low rates of exchange and extremely cheap water rates. In point of example regarding low water rates—it is now possible to ship steel bars from Antwerp to San Francisco for less than one-half the rate by rail from San Francisco to Fresno, Cal., a distance of 180 miles.

"Our cost of production, which due to higher labor rates prevailing on the Pacific Coast is higher than in the East, is also immeasurably increased through the necessity of our being compelled to transport raw materials necessary to the production of steel from interior Western and Middle Western points and considerable distances on the Pacific Coast.

"These conditions make the menace of cheap steel importation a serious problem for the interests of the Pacific Coast, and one that we believe can only be solved by a duty on foreign material based upon the American valuation plan as emphasized in the tariff bill now under consideration by the Finance Committee.

"We earnestly request your consideration of the facts set forth herein and, if necessary, will have a representative appear before the committee, if in the judgment of the committee this course is deemed advisable."

SHEET DEMAND STRONG

Large Volume of Business at Youngstown— Foreign Ferromanganese Bright

YOUNGSTOWN, OHIO, Oct. 4.—To all intents improved buying of iron and steel is on a firmer basis this week and is in some products, especially sheets, exceeding expectations of independents. Inquiries are being translated into orders in considerable volume, coming from both the jobbing and consuming trades. A number of substantial orders involving blue annealed sheets are now in course of rolling. If the current rate of sheet business keeps up the Republic Iron & Steel Co. will start the additional units at its Niles works, doubling the capacity of its original sheet mill plant, purchased from the old DeForest Iron & Steel Co. Eight mills have been installed housed in buildings erected parallel to the old plant. Owing to depression in the industry, this installation was never brought fully to completion by the company, and work was stopped last winter. Probably a month's work will be required before the equipment is ready for production. Hiring of machinists and other skilled workers for the Niles plant indicates the company's intention of placing the mills in readiness if business warrants.

More Advances Probable

It is, of course, no longer a secret that the independents are making concerted efforts to strengthen prices and much business has undoubtedly been driven to the mills under stimulus of such a movement. Accordingly, still further advances are looked for in sheets and sheet bars within a comparatively short time, though the mills will continue their practice of protecting customers against price increases for a limited period. Pointing to the advances in scrap materials, an independent predicts an early increase in the quotation of pig iron, to \$21 or \$22. Some sheet tonnage has been accepted by several district mills at prices in advance of the current market, in consideration of delivery advantages. This applies particularly to galvanized grades, some bookings having been made at 4.05c. and some at 4.10c. These, however, are in the minority.

Many More Inquiries

Valley mills received more inquiries the last two weeks in September than all during the summer, in some cases. The principal producers are booked from three to six weeks ahead in this department. One interest is rolling a sizable order of blue annealed to be used for ice containers and has added to its active galvanizing capacity due to pressure of demand from Southern buyers. One of the largest independents is working off an order for No. 13 gage blue annealed, among a miscellaneous variety of orders. Considerable tonnages of this grade are going to makers of stove-pipe who are generally ordering heavier gages than they did during the war, indicating one phase of the return to normalcy in this industry. Due to decline in its productive rate, the Ford Motor Co. has been specifying less freely against sheet contracts, though it has been taking 1500 tons and more each week from Valley makers. Producers are generally requiring that commitments on their books at the old prices be taken at once and will not guarantee delivery later at the old prices. Much of this low-priced business has now been worked off the books.

Southern Buyers Active

Sheet buying in general continues to receive impetus from Southern buyers, while much of the tonnage moving represents jobbers' requirements for roofing and other building materials. Makers predict that prices will shortly advance, blue annealed from 2.50c. to 2.75c. for No. 10 gage, black from 3c. to 3.25c. and possibly higher for No. 28 gage, and galvanized from 4c. to 4.25c. Many carload lot orders are being placed on producers' books. Price advances have extended to seconds in all grades and crop ends.

Makers of semi-finished material, particularly sheet and tin bar, have been benefited by improved buying in

these divisions, non-integrating interests especially enlarging their demands. The aggregate of such business on makers' books at the opening of the week was in excess of 18,000 tons. Fresh advances in open-hearth sheet bars from the new price of \$32 are looked for.

A Stabilizing Influence

Independents regard the action of the Carnegie Steel Co. in advancing bars to 1.65c. and plates and shapes to 1.75c. as a stabilizing influence. Though the new prices do not average higher than recent independent quotations, they represent an advance over actual prices due to the liberal price-cutting in these lines. Incoming plate tonnage is still largely sporadic and makers are inclined to regard a number of inquiries put out by tank car interests as a test of the market rather than representative of prospective business.

Though 2.40c. base, Pittsburgh, is regarded as the market on cold finished bars, a Valley interest which is not operating has quoted 2.25c., and there are intimations that 2.20c. has been done on such business.

The Valley steel company which has been in the market for 200 to 300 tons of 80 per cent ferromanganese has closed on imported material at \$60, for which it consistently held out. When the company originally put forth its inquiry the market was \$72, delivered. The price quoted includes delivery to the buyer's plant.

Purchase of 400 tons of fluorspar at \$14.60 by a Valley steelworks plant represents a new low price in the current market, though still regarded by consumers as too high. The market spread is from \$15 to \$16, while a company which has been buying in carload lots has been obliged to pay from \$16 to \$17.

An offer of \$55 per ton on 50 per cent ferrosilicon was made last week by a district buyer, which compares with the going price of \$60.

The Youngstown Steel Car Co. has received an order from the New York Central Railroad for the repair of 500 cars for the Pittsburgh & Lake Erie, which is in addition to a similar order placed several months before. The bookings of this company insure its steady operation until March 1 next.

Somewhat heavier buying has resulted from price reductions in steel pipe, involving chiefly merchant grades. Recent inquiries included one for 200 miles of 4 to 10-in. line pipe for Texas oil drilling interests. Butt-weld buying largely predominates with both district makers.

Coke Output Gains

UNIONTOWN, PA., Oct. 4.—Coke output in the Connellsville region continues to gain consistently with firmer demand and price. Additional ovens are being put into blast in various parts of the region daily. W. J. Rainey, Inc., this week fired 180 ovens at Mt. Brad-dock and has in operation 80 ovens at Elm Grove. The H. C. Frick Coke Co. has no ovens in operation, but it is expected that orders for firing ovens will be forthcoming shortly. The Frick company is now producing about 50 per cent normal in coal, operations at Leisen-ring No. 1, Continental No. 1, Trotter and York Run having been resumed during the past fortnight on a basis of about 50 per cent.

Shipments of freight out of the region are now running about 1000 cars, or a little more daily off the Monongahela division of the Pennsylvania Railroad. About 90 per cent is coal and coke with coke shipments running about 125 cars a day, an increase of 75 cars daily during the past month over July and August. Coal shipments are showing an increase of better than 100 cars daily over July and August.

Furnace coke is quoted at \$3.25 to \$3.75; foundry coke at \$4.25 to \$4.75. Pittsburgh seam coal is quoted at \$1.70 to \$2.25.

The Federal Drop Forge Co., Lansing, Mich., reports improvement in business. An order for \$20,000 worth of castings was just landed by President M. R. Carrier.

Hand of Engineer Guides the Conference

Secretary Hoover and Others Given Credit for Doing Much to Insure Success of Washington Deliberations on Unemployment—Progress Being Made

BY L. W. MOFFETT.

WASHINGTON, Oct. 4.—Recommendations made by the various committees of the unemployment conference as emergency measures to relieve the existing labor situation have been accepted generally as possessing the merit of practicability. Applied in good faith by all interests concerned, with a ready willingness to make temporary sacrifices, should they be necessary, confidence is expressed that the conference has worked out proposals that will have a far-reaching effect upon the economic life of the country. With temporary readjustment approached through the means urged, it is felt that when it resumes its sessions next Monday, the conference will be in a strong position to prepare permanent measures that will forestall recurrence of the present condition of unemployment.

That the machinery suggested for emergency measures, and to be suggested for permanent relief, will start off smoothly without any friction whatever is probably more than the conference can reasonably expect, because it is anticipated that in evolving new methods effecting changes in the industrial, financial and economic policies of the entire country, certain discord will prevail in given cases for a while. The process, to become entirely satisfactory, it is pointed out, will require time and must be more or less gradual, as is true of all other vast undertakings. It is a source of gratification, however, that so far there has been comparatively little dissension discernible, though differences of opinion there have been in the conference, with the possibility, if not probability, that much greater conflicts of opinion will be expressed when the plans for a permanent program are taken up. Past history of conferences where employers and representatives of employees have sat together to solve labor problems had unquestionably given an air of skepticism as to the opportunity to work out constructive plans at the present conference, but it likewise is equally true that the expeditious and favorable progress made so far has dissipated doubt to a great extent and created an increased hope and belief that the conference is actually going to come to satisfactory agreement that might easily mark an extremely important turn in the labor and industrial history of the United States. Until that eventuality develops, there no doubt will be mental reservations, but it cannot be denied that a fortunate state of mind with this object in view pervades the conference. Significant of this were statements given out simultaneously by President Joseph H. DeFrees of the Chamber of Commerce of the United States and President Samuel Gompers of the American Federation of Labor, both of whom are members of the conference.

Mr. DeFrees, in an appeal to business men and chambers of commerce, urged support of the emergency measures of relief that have been recommended, stating that "business has a great responsibility in the situation, it must furnish employment." Mr. Gompers, in a formal statement, pronounced the conviction that "the trade union movement in each community will join energetically in the task of providing work for the thousands who are idle," and said American labor would give its "whole-hearted support" to the emergency program, which, he asserted, "provided an opportunity for the co-operative action of all the agencies and institutions in each community to bring relief to the unemployed." These two statements, it is said, already have aided in speeding up the plans proposed to municipalities, states and private institutions, to relieve the situation.

Without any attempt to predict what may be the

outcome of the program adopted and the one to be taken up, it is evident that the favorable progress so far made is due in no small part to the background which the conference had charted for it from the outset, though at liberty, as it has done in some instances, to deviate from it in some particulars. This background plainly was the work of the Economic Advisory Committee of the Department of Commerce, organized by Secretary of Commerce Herbert Hoover to present a complete study, with suggestions to relieve the emergency situation and to prevent a return of such a labor condition as that now present. The study of this committee having been impartial and earnest and the conference joining in the spirit, it seems apparent that this has been an important element in the headway made, for the suggestions as to emergency measures by the committee have been adopted in a large measure and some expect its suggestions as to permanent relief will be treated similarly. The soundness of the measures is attributed to the high character of its personnel and this at once is a tribute to both the economist and the engineer, for the committee is made up of these classes, reflecting the view of Secretary Hoover as to the necessary qualification for such an important task.

To the steel industry as such the most interesting recommendations made for emergency relief were those of the manufacturers' committee, which, among others, consists of such men as Chairman Charles M. Schwab of the Bethlehem Steel Corporation; President James A. Campbell of the Youngstown Sheet & Tube Co., and President W. H. Stackhouse of the National Implement & Vehicle Association, chairman of the committee.

The Committee Recommendations

These recommendations are as follows:

Manufacturers can contribute to relieve the present acute unemployment situation by—

- (a) Part time work, through reduced time or rotation of jobs.
- (b) As far as possible, manufacturing for stock.
- (c) Taking advantage of the present opportunity to do as much plant construction, repairs, and cleaning up as is possible, with the consequent transfer of many employees to other than their regular work.
- (d) Reduction of the number of hours of labor per day.
- (e) The reduction of the work week to a lower number of days during the present period of industrial depression.
- (f) That employees and employers co-operate in putting these recommendations into effect.

A large number of employers have already, in whole or in part, inaugurated the recommendations herein set forth, and for this they are to be commended, and it is earnestly urged upon those employers who have not done so to put same into use, wherever practicable, at the earliest possible opportunity.

(g) Specific methods for solution of our economic problems will be effective only in so far as they are applied in a spirit of patriotic patience on the part of all our people.

During the period of drastic economic readjustment through which we are now passing, the continued efforts of anyone to profit beyond the requirements of safe business practice or economic consistency should be condemned. One of the important obstacles to a resumption of normal business activity will be removed as prices reach replacement values in terms of efficient producing and distributing cost plus reasonable profit.

We therefore strongly urge all manufacturers and wholesalers who may not yet have adopted this policy to do so, but it is essential to the success of these measures when put into effect that retail prices shall promptly and fairly reflect the price adjustment of the producer, manufacturer and the wholesaler.

When these principles have been recognized and the

recommendations complied with, we are confident that the public will increase their purchases, thereby increasing the operations of the mills, factories and transportation companies, and consequently reducing the number of unemployed.

Revising Working Schedules

This program will affect industrial establishments, including those of the steel industry, in the way of revising working schedules so as to give employment to a greater number of workmen. What may be possible in the way of producing for stocks, engaging upon new construction and repair work and readjusting prices is a question in view of the fact that producing costs in some steel lines already exceed prices obtained, but the recommendations concede by implication that some manufacturers and wholesalers have adopted the policy suggested so far as prices are concerned. It is inferred equally as plainly, however, that it is necessary for retail prices to reflect the price adjustment of the producer, manufacturer and wholesaler. Much complaint has been made that retail prices have not assumed their proper share in the readjustment, although many retail interests vigorously resent this. In this connection significance is seen in the statement of the committee that "One of the important obstacles to a resumption of normal business activity will be removed as prices reach replacement values in terms of efficient producing and distributing cost plus reasonable profit." Also it is maintained that labor will have to share its part and accept smaller wages in many instances and including the construction lines, the stimulation of which is especially stressed by the conferences as being a necessity. The suggestion that the problem of meeting the emergency of unemployment is primarily a community problem has met with general approval and accordingly the leadership is held to be with the mayors of the cities and plans urged for building up committees in communities to start public works through employment and registration agencies. Recommendations largely similar are made as to governors and States in order that work that can be done immediately should be begun.

When the Conference Resumes

Reports as to what may be done by the conference when it resumes its sessions to inaugurate permanent plans are numerous and some of them are disturbing. They are of more or less natural origin, and among other things have it that serious complications, if not open breaks, will develop over such subjects as wage reductions and proposed legislation. These being anticipatory in character, do not justify a great amount of consideration, but it is certain that President Harding, Secretary Hoover and others who are striving to bring about successful results will bend every energy to see that insurmountable conflicts of opinion are avoided. One of the possibilities of sharp differences that may arise, it is said, relates to the Adamson 8-hr. law, and some members of the conference plainly are of the belief that it should be wiped off of the statutes, but organized labor, as is well known, would vigorously oppose such a recommendation. There is, of course, a general and firm conviction that railroad rates must be reduced as one of the necessary fundamentals looking to a complete economic readjustment and some think that doing away with the Adamson law would be a forerunner in this direction. At the same time, others feel that rates can be reduced at once without waiting for action on such suggested legislation, which, it is stated, probably could not be expected, and in any event would require a long time for accomplishment. Those who think railroad rates can be reduced immediately without any legislation being required appear to have good grounds for their belief. It is reported from sources that cannot be disregarded that railroad executives themselves are now taking up plans looking to a general lowering of rate levels, and if this should eventuate, it is pointed out, a long stride toward readjustment would have been brought about. It is hoped that this would restore the farmers' purchasing power, cause a reduction in fuel costs, and establish other wholesome principles that are so vital before industry can again become normal.

AN IMPOTENT BOARD

Congressman Cooper's Views in Regard to Present Labor Problems

Following decision of the Railroad Brotherhoods to strike, despite the recommendations of the Railroad Labor Board that they accept its findings, Congressman John G. Cooper of Youngstown, Ohio, representing the nineteenth Ohio district, emphasizes the inadequacy of the board's authority. He contends cumulative evidence indicates that the board has failed to fulfill the mission for which it was created, viz. settlement of disputes arising between railroad operators and their employees.

"The Railroad Labor Board has been functioning for over 18 months," he states, "and while I believe that its members have worked hard to try and accomplish the things for which the board was created, yet at this time I am fully convinced they have failed for the reason that they have no power to enforce any decree or decision they may make. It is very evident at this time that the railway managers and employees of the railroads will not obey and carry out the decisions of the board.

"In short, we have a Government board costing the people about a quarter of a million dollars a year, attempting to do something it has no power to enforce. One of the most important things our country needs to-day is a closer working relationship between employer and employee, but we will never have this condition so long as we have governmental commissions attempting to settle their affairs for them. I am convinced that since the establishment of the board the railroad managers and their employees are farther apart than they ever were before, and that both sides, instead of trying to reach an agreement among themselves, pass on their difficulties to the board. I believe the Government should keep its hands off and permit employers and employees to work out their own industrial affairs."

Improvement in Chicago Building Situation

CHICAGO, Oct. 1.—The final settlement of the local building trades dispute, together with the announcement of railroad earnings for August, materially brightened business skies in this territory. The Chicago Building Trades Council last night unanimously voted to reaffirm the recent wage decisions handed down by Judge Kenesaw M. Landis, umpire in a dispute between the contractors and unions. The decision was concurred in by both the carpenters' and plumbers' unions, which had withdrawn from the negotiations previous to the award by the umpire. The vote of the council will reopen construction on more than \$60,000,000 worth of contracts, which had been delayed or halted by sporadic strikes of employees dissatisfied with the Landis award. The action of the council was undoubtedly given impetus by the announcement of the umpire that he would grant a rehearing on none of the points in the dispute unless his award was accepted and the men returned to work.

Fourth Classification Added

Following a two-day conference between representatives of the Amalgamated Association of Iron, Steel and Tin Workers and the Western Sheet and Tin Plate Manufacturers' Association, it was announced that a fourth classification has been added to the jobbing mill scale, under which heaters and helpers will receive 15 per cent less than for work under classification two. Under classification four, the rate will vary according to the gage of material rolled. The same rates as in classification two will apply to all other positions in the fourth classification.

The Supreme Motors Corporation, Warren, Ohio, has received an order for 2500 motors and has on its books business aggregating \$800,000 in value.

SHORT TRADE ITEMS

The Rusfal Mfg. Co., 132 North Seventh Street, Philadelphia, has purchased the good will and complete equipment of Joseph Carr Co., general machinist, 132 North Seventh Street, that city. A complete reorganization of every department of the business will immediately be made. The combining of the two concerns carries with it a knowledge and experience of many years in designing, developing and making intricate mechanical devices, tools, scientific instruments, experimental work, quantity production, etc.

L. C. Biglow & Co., Inc., 232 West Fifty-fifth Street, New York, have been appointed New York district agents for the Hartford Tap & Gauge Co., the Hanson-Whitney Machine Co., Inc., the Taylor & Fenn Co., and the Whitney Mfg. Co., all of Hartford, Conn. They will handle taps of all kinds, finished after hardening, correct in lead, outside diameter and pitch diameter, with shank and thread concentric; also plug thread gages of greatest accuracy; also bore grinding machines, two spindle automatic spline milling machines, sensitive drilling machines, including radial, wet tool grinder and spring foot press, products of the Taylor & Fenn Co.; for the Hanson-Whitney Machine Co., vertical die shaping machines, centering machines and automatic thread milling machines; for the Whitney Mfg. Co., roller, block, and silent types of chain and Woodruff keys.

The trading department of Asano & Co. has been amalgamated with Asano Bussan Co., New York, importer and exporter. Business will be done in the name of the latter company.

Alfred Herbert, Ltd., machine tool manufacturer, Coventry, England, and representative of many American machine tool companies in the sale of their machines in Great Britain, will close its New York office, Hudson Terminal Building, and E. D. Mitchell, manager, will return to England within a few weeks.

The Defiance Machine Works, Defiance, Ohio, manufacturer of metal and woodworking machinery, has closed its New York office and its manager, R. W. Shore, has returned to the home office in Defiance.

The Kearney & Trecker Co. has removed its New York office from 149 Broadway to 50 Church Street. B. W. Stone is manager.

The R. B. Hayward Co., contractor and engineer, 849-853 West Ohio Street, Chicago, has purchased the business of the Frank Trenkhorst Mfg. Co., 902 Larrabee Street, manufacturer of copper and steel tanks, brass finishing, and special equipment for glucose refiners, paint manufacturers, etc., and will operate the plant along the same lines as under its previous management.

The Metal Sales Co., Detroit, has changed its name to Whaling & Hartman.

The Missouri Iron & Steel Corporation, International Life Building, St. Louis, has filed notice of change of name to the Consolidated Steel & Iron Corporation.

The Dauber-Bell Machine Co., Oshkosh, Wis., has changed its corporate title to the Bell Machine Co. At the same time the capital stock was increased from \$75,000 to \$100,000. The concern manufactures special machinery, metal and woodworking tools and conducts a jobbing shop.

The Boker Cutlery & Hardware Co., 101 Duane Street, New York, manufacturer and importer of hardware and cutlery, has been consolidated with H. Boker & Co., Inc., thereby again bringing under one name all departments of the old firm of Hermann Boker & Co., which was established in 1837. The personnel of the Boker Hardware & Cutlery Co. remains unchanged, the business continuing under the direction of J. R. Boker and Edward Grafmueller.

Tilley & Brown, engineers in design and construction of furnaces and ovens and layout of oil fuel and gas fuel systems, and Harry E. Gilbert, C.E., Bridgeport, Conn., combustion engineer, have formed a cooperative arrangement. Tilley & Brown specialize on general systems for oil or gas fuel and on the subject of inbuilt furnaces and ovens of standard and special design. Mr. Gilbert has specialized in the development of mechanical atomizing oil burners for metallurgical furnaces and steam power plants.

The American Bosch Magneto Corporation, Springfield, Mass., has just completed the erection of its 10-story Bosch building at 17-19-21-23 West Sixtieth Street, New York, of steel, stone and concrete. The corporation will occupy four floors for its automotive electrical sales and service station.

The Arthur Sachsse Corporation, 6 West Thirty-second Street, New York, has been formed by Arthur Sachsse and Felix F. Wiener to promote the sale of patents, formulas and processes. The corporation will deal principally with the

exploitation of inventions and developments made during the war in Germany and will offer manufacturers' rights to American firms. Associated with Mr. Sachsse and Mr. Wiener are some prominent patent attorneys.

The Hurwitz Brothers Iron & Metal Co., Inc., Syracuse, N. Y., has opened a branch office and scrap iron yard at 133-157 Marilla Street, South Buffalo, N. Y., on the B. R. & P. Railroad.

R. M. Belyea, Union Steel Casting Co., formerly with headquarters at 53 Gerard Street, Roxbury, Boston, is now located at 73 Water Street.

Crocker Brothers, Boston, pig iron, formerly located at 24 Milk Street, room 1110, have moved to room 909. Loring Gary Kalkins is manager.

The H. O. Price Co., Oliver Building, Pittsburgh, has been appointed exclusive agent for the sale of its magnesite brick by the Superior Basic Brick Co., Pittsburgh, plant of which is located at Parkerstown, Pa. The H. O. Price Co. also has been appointed by the Mine Lubricants Co., Ltd., Lancaster, England, exclusive agent for the sale of its fluorspar in the Pittsburgh, Youngstown and Cleveland districts.

Grover Brothers & Wood, 428 East Jefferson Avenue, Detroit, manufacturers of pneumatic tube carriers, etc., have filed notice of change of name to the Grover Co.

The Metal Sales Co., General Motors Building, Detroit, has changed its name to Whaling & Hartman. Members of the firm are Montgomery Whaling, for 15 years manager of the American Steel & Wire Co., Detroit, and Walter C. Hartman, president of the National Mfg. Co. The firm is acting as district manager for the Wickwire-Spencer Steel Corporation, La Salle Steel Co. and the American Enameled Magnet Wire Co., the last named of Muskegon, Mich.

W. J. Rainey, Inc., has discontinued its branch office in the Real Estate Trust Building, Philadelphia, this business to be conducted from its general offices, 52 Vanderbilt Avenue, New York. Francis Y. Casey, formerly Philadelphia representative, has been appointed assistant manager of sales and Gilbert S. Sank will be associated in the sales department.

The Wopco Machine Co., New Haven, Conn., recently incorporated with a capital of \$60,000 to manufacture shear grinding machines, can-opening machinery, parts, etc., is having all its work done by contract except assembling and shipping.

The Patton Cement Co., Rotan, Tex., has been incorporated with a capital of \$350,000, to manufacture cement. The incorporators are B. F. Reeves, J. E. Durham and A. L. Foy, Rotan.

The Los Angeles Brass Foundry, 2052 East Vernon Avenue, Vernon, has been organized to manufacture brass, bronze and other metal castings. T. J. Morgozewitz, 416 Vernon Avenue, Los Angeles, heads the company.

Galland-Henning Mfg. Co. Plans

In anticipation of improved business conditions, the Galland-Henning Mfg. Co., Milwaukee, Wis., has recently reorganized and increased its sales engineering department. N. W. LeVally and H. C. Norman, Milwaukee; P. H. Arden, Chicago; S. W. West, Cleveland, and John F. Willard, Los Angeles, formerly connected with Logemann Brothers Co., are now affiliated with the Galland-Henning Mfg. Co. Mr. LeVally as general and sales manager and Mr. Norman as assistant sales manager will be located in the general offices in Milwaukee. Mr. Arden will be located in Chicago; Mr. West in Cleveland, and Mr. Willard in Los Angeles, as sales engineers in their respective districts. R. O'Donnell will be located in New York as sales engineer for the New York district.

With this reorganization the Galland-Henning Mfg. Co. will improve and extend its line covering electric and hydraulic baling presses for metals, rags, paper and other waste products, accumulators, pumps, valves and hydraulic production presses.

Expansion of S-P Mfg. Co.

The S-P Mfg. Co., a Cleveland corporation, has purchased the former American Air Chuck Co. of Chicago and has acquired all of the patents, good will, tools, etc., of the latter company. The work of re-establishing the business is already under way and with the aid of J. A. Olson, inventor of the American air chucks, collets, vises, etc., who will be associated with the S-P Mfg. Co., the product will be ready for the market within a very short time.

The regular business of the S-P Mfg. Co. has consisted of the design and manufacture of special machinery, fixtures, jigs, tools, etc., which line will be continued as usual, and as demand increases additional equipment will be installed for the manufacture of the air devices. It is the aim of the company to further develop the use of air power equipment for production work to replace the hand methods of chucking work and similar operations.

Machinery Markets and News of the Works

INQUIRY IS LIGHT

No Marked Change in the Machine-Tool Situation Has Developed

Some Interest on the Part of Railroads, but Purchases Are Small in Comparison with Actual Requirements

Railroads continue to show some interest in new shop machinery, but the amount of their purchases remains very small compared with their probable requirements for complete rehabilitation of their machine-tool equipment. Many of the most active prospects, however, are railroad inquiries, which fact tends to focus attention on what the carriers may buy when their financial condition becomes more prosperous. Recent reports of some of the leading lines show that their profits are approaching the Government guarantee figure.

New York

NEW YORK, Oct. 4.

The New York City Board of Education will advertise for bids within two or three weeks on more than 100 metal and wood-working machines for seven vocational training schools. A tentative schedule of the machines required is as follows: Seven universal milling machines, seven 15-in. shapers, seven 12-in. engine lathes, 4 and 5-ft. beds, seven speed lathes, 8 and 11-in. with 4-ft. beds, seven 20-in. drill presses, seven 14-in. sensitive drills, seven power hack saws, 6 x 6 in., seven 14-in. universal grinders, seven small gas annealing furnaces, with blowers, seven tool post grinders, seven small arbor presses, one small planer and all necessary auxiliary equipment, small tools, etc. Wood-working tools: Two band saws, 12 or 14-in. wheels, three 6-in. hand planers or jointers, four 30-in. band saws, five variety bench saws with hollow chiseling, boring and mortising attachments, two 12-in. speed lathes, 6-ft. bed, with hand feeding carriage, six 12-in. speed lathes with 4-ft. bed, five 15-in. disk sanders, seven 8½-in. bench wood trimmers. All of the wood-working machines are to have individual motor drive; other machines to be operated from line shafting. In addition to the above there will probably be seven lathes, seven presses and seven grinders for an automobile mechanics' shop.

Conditions in the local machine-tool trade are unchanged. There is very little business and prospects are not numerous.

The Wilmarth & Morman Co., Grand Rapids, Mich., announce a reduction in prices on its machines, effective Oct. 1.

The past week was marked by considerable activity in the closing and awarding of contracts for electrical cranes that have been pending for some time. New inquiries, however, were scarce, this scarcity being particularly marked in the hand power crane field. Inquiries for locomotive cranes, particularly second-hand, are more numerous, one dealer stating that in the past 10 days he has received more inquiries than the total of the previous three months. The inquiry for 26 7½-ton and 15-ton cranes that appeared in the market some time ago, has been dropped by the prospective purchaser, the American Bridge Co., which intended purchasing only in the event it was awarded the contract for the installation of the 80,000 tons of pipe in Bombay, India. The inquiry of the Porcupine Co., Bridgeport, Conn., for a list of cranes is still pending, although previously re-

The Big Four, which recently bought about a dozen tools for its Beech Grove, Ind., shops, will, it is reported, soon issue another list covering requirements of other shops. The Santa Fe Railroad has bought cranes for its Albuquerque, N. M., shops and has added several tools to its outstanding inquiries. The Boston & Albany has bought a steam hammer and drill press and the Maine Central is in the market for a punch and shear. Lists of the New York Central, Rock Island and Chesapeake & Ohio are still pending. The Boston Elevated Railway Co. has bought a few upright drills. The revived inquiry of the Union Railroad, Pittsburgh, is said to be only for the purpose of determining whether present prices are favorable for purchasing. The list has been figured upon three or four times in the last two years.

Inquiry from manufacturers is still very light, but in some markets shows a slight improvement. Most of the inquiries are for single machines, but there are a few exceptions. A Rhode Island company planning to engage in the manufacture of an automobile part is inquiring for 16 tools.

ported placed with the Shepard Electric Crane & Hoist Co. The Erie Railroad, which recently inquired for an 8-ton hand power crane for the Forest City Colliery, Forest City, Pa., has purchased from an unnamed builder. There still remains one 10-ton hand power crane to be purchased by the Erie Railroad for Colliery No. 5, Pittstown, Pa.

Among the recent sales are: Cleveland Crane & Engineering Co., one 40-ton double hook, 30-ft. span and one 10-ton, 15-ft. 6-in. span overhead traveling cranes to Stone & Webster, Boston, for the Ford plant at Green Island; Shepard Electric Crane & Hoist Co., three 2-ton electric hoists to the Morrow Mfg. Co., Wellston, Ohio; Northern Engineering Works, a 7½-ton, 55-ft. span overhead traveling crane to the Central Cut Stone Co., Detroit; Reading Chain & Block Corporation a 16-ton, 27-ft. span hand power crane to the New York & Pennsylvania Co.; Industrial Works, a 160-ton wrecking crane to the Delaware & Hudson Railroad, Albany, N. Y.; Shaw Electric Crane Co., a 35-ton gantry crane to the Philadelphia & Reading Railroad; Chesapeake Iron Works, a 15-ton overhead traveling crane to the Virginian Railway, Norfolk, Va.; Philip T. King, 30 Church Street, New York, two 15-ton, 70-ft. boom second-hand Brownhoist locomotive cranes to the Balling Contracting Co., Utica, N. Y.

At the opening of bids for the 34 2½-ton gantry cranes for the New York city docks at Stapleton, S. I., Oct. 4, at noon, 12 crane builders quoted. Complete quotations included five propositions. Proposition E, which was a straight bid for the building and erection of 34 2½-ton gantry cranes and accessories, resulted as follows: Heyl & Patterson, \$8,862 each, a total of \$301,308; Wellman-Seaver-Morgan Co., \$9,996.26 each, total of \$339,873; Niles-Bement-Pond Co., \$10,230 each, total of \$347,820. Other bids totaled as follows: Dravo Contracting Co., Pittsburgh, \$350,710; Maine Electric Co., Portland, Me., \$386,818; McMyler Interstate Co., \$388,688; Pawling & Harnischfeger Co., \$400,350; Manning, Maxwell & Moore, \$413,916; Exeter Machine Works, Pitts- ton, Pa., \$421,940; Lakeside Bridge & Steel Co., North Milwaukee, Wis., \$450,568; Brown Hoisting Machinery Co., \$491,980; Industrial Works, \$577,357.

The Archer Automobile Development Co., recently incorporated, will soon install equipment in a factory at Saratoga Springs, N. Y., to manufacture automobile specialties, the invention of Mr. Archer. He has designed several automobile improvements, including an automatic cut-out clutch, an improved type of transmission and a puncture proof tire. In addition the company plans to bring out a new automobile with an air-cooled engine.

The Finkel Umbrella Frame Co., East 177th Street, New York, has filed plans for a new one-story building, 26 x 50 ft.

The Pittsburgh Plate Glass Co., Pittsburgh, has awarded a contract to Bame & Cardell, Central Avenue, Albany, N. Y., for a new two-story plant on Tivoli Street, Albany, 103 x 180 ft. Eastern headquarters of the company are at 103 Hunters Point Avenue, Long Island City.

The Central Train Control Co., Albany, N. Y., has been incorporated with a capital of \$200,000 by A. H. C., and N. Hawley, 69 Eagle Street, to manufacture mechanical safety equipment and controlling devices. It is represented by A. M. Higgins, 55 Liberty Street, New York.

The Motors Accessories Corporation, New York, has been incorporated under Delaware laws with capital of \$200,000 by Chester Clark, Jr., and Werner Howard, New York, to manufacture automobile equipment and parts. It is represented by Woodburn Martin, Georgetown, Del.

The George Haiss Mfg. Co., Canal Place near 141st Street, New York, manufacturer of coal-handling machinery, has filed plans for a one-story addition, 34 x 100 ft.

The Napier Saw Works, Inc., Middletown, N. Y., has been incorporated with a capital of \$100,000 by W. P. Jeffery, W. E. Cross and J. H. Greene, Middletown, to manufacture saws and similar products. It is represented by Cornell, Lockwood & Jeffery, 2 Rector Street, New York. The same incorporators recently formed the Victor Saw Works, with like capitalization, to manufacture similar products.

The Wisner Mfg. Co., 230 Greenwich Street, New York, manufacturer of dairy machinery, has acquired the six-story and basement building at 241-43 West Broadway, 38 x 100 ft., for a new plant. Improvements and alterations will be made and occupancy effected at an early date.

The Guaranteed Battery Mfg. Co., New York, has been incorporated with a capital of \$150,000 by P. Probst, D. Smith and E. Harris to manufacture electric batteries and parts. It is represented by Sidney Nordlinger, 489 Fifth Avenue.

Horrigan & Payne, Brooklyn, have leased a floor in the building at 65 Fourth Street for the manufacture of cement shingles, etc.

The Treco Metal Products Corporation, New York, has been chartered under State laws to manufacture metal goods, including engine parts, etc. The incorporators are D. W. Van Keuren, C. and A. Gulotta. It is represented by M. B. Gluck, 97 Warren Street.

A new one-story automobile service and repair plant will be erected by Simon Garber & Sons, 1876 Pitkin Avenue, Brooklyn, manufacturers of oils, in connection with a new warehouse at Junius Street and Sutter Avenue, with total cost estimated at \$200,000.

The Mulcott Belting Co., New York, has been incorporated with a capital of \$200,000 by W. M. Smith, M. Lippman and L. C. Stern to manufacture mechanical belting. McLaughlin & Stern, 15 William Street, represent the company.

The Brooklyn Edison Co., 360 Pearl Street, Brooklyn, is arranging for a bond issue of \$3,000,000, the proceeds to be used for general operations and financing, extensions, improvements, etc.

The Service Auto Repair Works, Inc., Brooklyn, has been chartered under State laws to operate a local machine and repair works and to manufacture automobile parts, etc. The incorporators are J. H. and C. E. Bladin and F. R. Petry. The company is represented by Smith, Reiher & Griffin, 44 Court Street, Brooklyn.

The Rapid Meat Cutter, Inc., Brooklyn, has been incorporated under Delaware laws with capital of \$250,000 by Cornelius A. Cole and William E. Schiels, Jr., Brooklyn, to manufacture meat-cutting machines and similar equipment. It is represented by the Registrar & Transfer Co., 900 Market Street, Wilmington, Del.

The Sanitary Equipment & Mfg. Co., New York, has been incorporated with a capital of \$100,000 by C. D. Klauber, T. A. Stopford and Harry Dubinsky, 302 Broadway, to manufacture sanitary appliances and equipment.

The Phillips Petroleum Co., 115 Broadway, New York, operating oil refineries, has disposed of a bond issue of \$3,500,000, the proceeds to be used for general operations, financing, extensions, etc.

The Chelsea Garage, 157 West Eighteenth Street, New York, has leased a two-story building under construction at Little West Twelfth Street and Ninth Avenue, 125 x 129

ft., for the establishment of a new automobile service and repair works. Abraham Solter heads the company.

The Forbes Aluminum Products Corporation, recently organized under Delaware laws with capital of \$4,500,000, and now planning the erection of works at Easton, Pa., has established headquarters in the building at the Northeast corner of Thirty-eighth Street and Fifth Avenue.

The New York Edison Co., Irving Place and Fifteenth Street, New York, has made application to the Public Service Commission for permission to issue bonds for \$30,000,000, and for permission for its subsidiary, the United Electric Light & Power Co., same address, to issue a similar amount. The proceeds will be used for general operations, plant and system extensions.

The Water Power Commission, Albany, N. Y., has tentative plans under way for a number of power plants on the Barge Canal. It is proposed to develop a total capacity of about 40,000-hp., with distribution and sale in the districts along the route.

The Airship Construction & Navigation Co., New York, has been incorporated with a capital of \$5,000,000 to manufacture airplanes and parts. It is represented by Arthur W. Britton, 65 Cedar Street.

The Save Electric Corporation, 254 Thirty-sixth Street, Brooklyn, manufacturer of incandescent electric lamps and other electrical products, has acquired property at Toledo, Ohio, for a new plant, estimated to cost about \$300,000 with equipment. Construction will commence at an early date.

The Hudson Skylight & Roofing Works, Inc., Bayonne, N. J., has been incorporated with a capital of \$50,000 by John Shea, Samuel Bachner and Emil Dannacher, 8 West Twenty-seventh Street, Bayonne, to manufacture sheet metal products.

The Stowell Mfg. Co., Mallory and Culver avenues, Jersey City, N. J., manufacturer of roofing products, is planning for the immediate rebuilding of its plant, destroyed by fire Sept. 27, with total loss estimated at \$500,000.

Walter Butterfield, Wildwood, N. J., is completing plans for a new one-story machine shop, 45 x 80 ft.

The Pennsylvania Railroad Co., Pennsylvania Terminal, New York, will erect a new one-story, reinforced-concrete coaling and coal-heating building at South Amboy, N. J., estimated to cost about \$100,000, with equipment.

The Lozier Mfg. Co., 142 Pine Street, Montclair, N. J., manufacturer of metal products, will build a one-story addition, to be equipped as a plating works.

The Fulton Lumber Terminal Co., 120 West Forty-fourth Street, New York, will commence the immediate erection of its new plant on the Hackensack River. It will consist of a planing mill, sash and door factory, box-manufacturing and other wood-working buildings, with cold storage plant for foodstuffs. In addition to power plant equipment and general operating machinery, loading and unloading machinery, conveying equipment, etc., will be installed. It is also planned to build a number of piers in the Hackensack River, provided with mechanical lumber-handling apparatus. E. P. Eckles, formerly superintendent of transportation of the Erie Railroad, is president, and E. R. Shaw, general manager.

The Rafter Machine Co., 579 Grove Street, Irvington, N. J., manufacturer of machinery and parts, has awarded a contract to the United Construction Co., Grove Street, Irvington, for its new one-story machine shop at Belleville, N. J., estimated to cost about \$12,000. John Rafter is president.

The Automatic Wrench Co., Newark, has been chartered under State laws by Frank N. Smyth and John J. McAndrews, 8 Orleans Street, to manufacture wrenches and other mechanical products.

Arthur Delapierre, Inc., 19 Warren Street, New York, manufacturer of tool handles and kindred products, has acquired 4 acres and a number of concrete buildings at South Orange, N. J. The company will equip the plant for the manufacture of its regular products, and will utilize about 20,000 sq. ft. of space for the shops.

Jacob Steinberg, Newark, N. J., operating a factory at 275 Belmont Avenue, for the manufacture of metal cornices, etc., will establish a new plant at an early date. The present works are located in restricted property district and vacation has been ordered by the City Zoning Commission within six months.

A new one-story power house will be erected by the General Leather Co., 420 Frelinghuysen Avenue, Newark. Plans have been completed.

The Kelsey Motor Co., 25 Branford Place, Newark, N. J., has purchased about 6 acres on Washington Avenue, Belleville, N. J., as a site for its proposed new works for the manufacture of friction-drive automobiles and parts. Plans have been completed for the initial works and bids for

construction are being asked. The Industrial Engineering Co., 30 Church Street, New York, is engineer.

The Cyclone Fence Co., Waukegan, Ill., manufacturer of wire fencing, has leased a portion of one of the buildings at the plant of the Carrier Engineering Co., 750 Frelinghuysen Avenue, Newark, for the establishment of a branch works.

The Board of Education, Newark, is planning to open part of the new Seymour Vocational School, now in course of erection, early in January, and proposes to install equipment at an early date. Shops will be arranged for instruction in automobile construction and repair work; electrical construction and repair; general machine work; pattern-making, and other lines.

The Angster-Strigner Co., Newark, N. J., has been incorporated with a capital of \$100,000 by Edward L. Angster, John H. and William A. Strigner, 224 Badger Avenue, to manufacture heating equipment and supplies.

Philadelphia

PHILADELPHIA, Oct. 3.

William Lewis, Philadelphia, has awarded a contract to H. Rowen, 1232 East Columbia Avenue, for the erection of a one-story machine shop at 1411 Frankford Street, estimated to cost about \$12,000.

John Evans' Sons, Inc., Philadelphia, has been incorporated with a capital of \$51,000, to manufacture machinery and parts. J. H. Evans, Oak Lane, is treasurer.

Horace T. Potts & Co., 316 North Third Street, Philadelphia, manufacturers of iron and steel products, have awarded a contract to the William Steele & Sons Co., Sixteenth and Arch streets, for the erection of a new plant to cost about \$450,000, including equipment.

The Philadelphia Electrical & Mfg. Co., 1206-1220 North Thirtieth Street, Philadelphia, manufacturer of electrical products, has acquired an adjoining one-story building, 62 x 157 ft., for extensions.

The Adem Devices, Inc., Philadelphia, has been incorporated in Delaware with capital of \$55,000 to manufacture adding and calculating machines and parts. It is represented by the Corporation Guarantee & Trust Co., Land Title Building, Philadelphia.

The Public Works Department, Philadelphia, has awarded contract to the Robbins Construction Co., 1137 North Front Street, for its one-story machine and repair works, 160 x 220 ft., estimated to cost about \$115,000, including machinery.

The Vallette Machine Co., Philadelphia, is being organized to manufacture tools, fixtures, machine parts and automobile equipment and devices. Application for a State charter will be made on Oct. 24. It is represented by Sundheim, Folz & Sundheim, Real Estate Trust Building.

The Van Blerck Motor Service Co., Philadelphia, is being organized by Theodore Wiedemann, George Levene and Herbert L. Howard to manufacture and repair gasoline engines. Application for a State charter will be made Oct. 19. The company is represented by Harry M. McCaughey, 1011 Chestnut Street.

The Union Transfer Co., 1004 Spring Garden Street, Philadelphia, is having plans prepared for a one-story automobile service and repair works, 105 x 105 ft., with extensions, 60 x 150 ft., at Atlantic City, N. J., for company trucks and cars, estimated to cost in excess of \$75,000. C. J. Mitchell, 129 South Fifteenth Street, Philadelphia, is architect.

The Board of Education, City Hall, Camden, N. J., has arranged for the erection of a one-story machine shop and manual training building at the city high school, to cost about \$60,000.

The Pennsylvania Power & Light Co., Allentown, Pa., is disposing of a bond issue of \$8,000,000, the proceeds to be used for general operations, plant and system extensions and improvements.

The plant and property of the Rittenhouse Iron Co., Rittenhouse Gap, Pa., has been acquired by the Southern Coal & Iron Corporation. The new owner has taken possession and plans for immediate operations.

Herre Brothers, Harrisburg, Pa., manufacturers of heating specialties, etc., have acquired property at Seventh and Emerald streets as a site for a new factory to manufacture sheet metal products. Plans are being prepared. Paul F. Herre will be in charge.

The Dombach & Bissinger Motor Co., 113 North Prince Street, Lancaster, Pa., is taking bids for the erection of a new machine shop and automobile service and repair works, estimated to cost close to \$150,000. Grover C. Snyder, 28 North Mary Street, is architect and engineer.

The State Highway Department, Harrisburg, Pa., has awarded a contract to the Hughes-Foulkrod Co., Common-

wealth Building, Philadelphia, for the new two-story automobile service and repair building, 100 x 200 ft., and estimated to cost about \$150,000.

In connection with extensions and improvements to the waterworks system, S. F. Hassler, superintendent of the water department, Harrisburg, Pa., will take bids up to Oct. 13 for a new 15,000,000-gal. low-lift, pumping unit to be installed at the filtration plant, with boiler and auxiliary power equipment; and for a 15,000,000-gal. high-lift, centrifugal pumping unit, new power house, boiler and miscellaneous power equipment at the main pumping station.

New England

BOSTON, Oct. 3.

Improvement is noted in the machine-tool business and sentiment appears to have undergone a decided change regarding the outlook. Sales the past week cover a variety of machines and are about equally divided between new and used equipment. Prices at which some new tools sold run well into four figures and in at least one instance higher. The largest new inquiry totals 16 tools, including lathes, shapers, grinders, milling machines and drill presses, and comes from a Rhode Island concern about to engage in the manufacture of an automobile part. The Maine Central Railroad is in the market for a fairly large punch and shear, while a textile machinery interest is inquiring for a special design planer. The Boston Insulated Wire Cable Co. wants a used 30-in. planer and a Lowell company is inquiring for used No. 2 Brown & Sharpe automatic screw machine equipment. A Cleveland representative of an automobile accessory manufacturer is in this market for the purpose of closing on vertical milling, 18' x 24-in. plain milling, thread milling, power hack saw and other equipment, while a Milwaukee concern wants used Brown & Sharpe automatic machines.

Among sales the past week are a 2500-lb. steam hammer and a 28-in. drill to the Boston & Albany Railroad. One large New England electrical equipment maker purchased two jig boring machines, costing more than \$10,000, and a number of gages. Stone & Webster have awarded one 40-ton and one 10-ton crane for the Ford Green Island plant to the Cleveland Crane & Engineering Co. The Boston Elevated Railway Co. has taken additional upright drilling equipment and a manufacturer of washing machines has closed on a universal miller, a four-spindle drill and other used machines. One dealer in the past 10 days sold 14 turning tools for piston ring and pin work, in addition to a heavy tapping machine, all used equipment. Another sold a 2-in. screw machine and drill grinder, two large power presses and a Van Norman milling machine. The Boston Navy Yard will receive bids until 10 a. m., Oct. 11, for electric rivet heating equipment.

Manufacturers of bushings, particularly oilless, report increased business. The demand for motors, on the other hand, is limited mostly to the textile field. A large percentage of machine tools being moved to-day are belt driven. This applies to new as well as used tools.

Contract has been awarded for the erection of a workshop, 50 x 90 ft., for Louis W. Kiefer, 191 John Street, Bridgeport, Conn.

Plans are in progress for a one-story welding shop, 53 x 92 ft., for the Auto Welding Co., Lawrence, Mass.

A Massachusetts charter has been granted the Massachusetts Pressed Steel Co., Worcester, capitalized for \$50,000, of which Thomas H. Pearsall is president and treasurer.

Potter Brothers, Inc., 341 Main Street, Malden, Mass., will erect a one and two-story garage and service station to cost approximately \$50,000.

The Tilleston & Hollingsworth Co., 892 River Street, Hyde Park, Boston, paper manufacturer, is erecting an addition to its plant.

The David Brown Bobbin Co., Market and Foster streets, Lawrence, Mass., is building a two-story addition, 40 x 104 ft.

James F. Quest, 176 Huntington Avenue, Boston, is president, and Frederick L. MacDonald, 10 Spruce Street, Waltham, treasurer of the Flostik Co., Waltham, capitalized for \$50,000, recently granted a Massachusetts charter to manufacture surgical instruments, equipment and novelties.

J. E. Conant & Co., Lowell, Mass., on Oct. 13 will sell at public auction the plant and equipment of the Chapman Mfg. Co., Winchester, Mass., leather machinery. A large list of machine tools is included.

The Atmospheric Heat & Power Co., Biddeford, Me., has been incorporated with a capital of \$1,000,000 to manufacture heating and power apparatus, etc. George B. Gordon, Biddeford, is president.

The Edison Electric Illuminating Co., Boston, is arranging to proceed with the enlargement of its electric generating

plant to be ready for service during the coming year. The work will include the installation of a new 30,000-kw. turbo-generator, new boilers and auxiliary operating equipment. Charles L. Edgar is president.

The G. F. Wright Steel & Wire Co., Worcester, Mass., recently organized by George F. Wright, formerly head of the Wright Wire Co., has acquired the former plant of the Standard Plunger Elevator Co., Jamesville, Mass., for the establishment of new works. The buildings will be remodeled.

The Noyes Buick Co., Springfield, Mass., has awarded contract to Edward Radding, 158½ Main Street, for its new one-story automobile service and repair works at Main and Gardner streets, 100 x 185 ft., to cost \$100,000.

The Richard French Iron Works, Worcester, Mass., has acquired property at Millbury, Mass., for the erection of its new plant. The first unit will be one-story, 65 x 150 ft. Raymond Tracy is president.

The Verto Products Co., Pawtucket, R. I., has been incorporated with a capital of \$200,000 by Warren F. Stanton, William E. White and Darius Goff, 1 Homestead Avenue, to manufacture machinery and parts.

Fire, Sept. 27, destroyed the one-story building at 1566 River Street, Hyde Park, Boston, occupied by the Pluff Mfg. Co., manufacturer of gages, etc., with loss estimated at about \$25,000.

The Lash Motor Co., Lincoln Street, New Britain, Conn., is planning for the erection of a three-story service and repair works to cost \$50,000.

Fire, Sept. 26, destroyed the plant and machinery of the Calais Cabinet & Veneer Co., Calais, Me., with loss estimated at about \$40,000. It will be rebuilt.

The Universal Stamping Machine Co., Pacific Street, Stamford, Conn., has filed plans for a one-story addition, 49 x 50 ft.

The Central Maine Power Co., Augusta, Me., has disposed of a bond issue of \$3,000,000, the proceeds to be used for general operations, plant extensions, improvements, etc.

Pittsburgh

PITTSBURGH, Oct. 3.

Machine-tool inquiries the past week have been fewer than in the previous week and sentiment is not as cheerful. The revival of the list of the Union Railroad, a subsidiary of the Steel Corporation, originally issued more than a year ago, is chiefly for ascertaining present prices. This is the third or fourth time the list has been put out and unless quotations now are favorable purchases again will be deferred. Tools for the shops of the Western Penitentiary, Pittsburgh, have not yet been placed, although contract for the buildings recently was awarded. It is probable that the Salmon Creek Lumber Co., Kellettville, Pa., will be in the market shortly for wood-working machinery to replace that destroyed in a fire Sept. 26. The Bessemer Gas Engine Co., Grove City, Pa., has awarded a 10-ton crane to the Cleveland Crane & Engineering Co., Wickliffe, Ohio. Inquiries of the National Radiator Co., Johnstown, Pa., for a crane for its New Castle, Pa., works, and of the National Tube Co. for a couple of cranes for its Christy Park works, McKeesport, are dormant. Bids are being received for two hoists, inquired for by the American Steel & Wire Co. for its Trenton, N. J., works and the Pittsburgh Steel Co. has an inquiry out for a 1½ to 2-ton trolley. The Frank B. Ward Co., Park Building, Pittsburgh, has an inquiry for a 25-ton steam locomotive crane to run on standard gage track, and having a boom of approximately 75-ft.

The United States Lock-Nut Corporation, 400 North Michigan Avenue, Chicago, is considering the erection of a new plant in the vicinity of Pittsburgh, to manufacture special lock-nuts, etc., estimated to cost in excess of \$250,000. Mr. Erickson, address noted, is in charge.

The Superb Radiator Co., Youngsville, Pa., has been incorporated with a capital of \$50,000, to manufacture radiators and other heating equipment. C. P. Cloak, Youngsville, is treasurer.

The Aluminum Co. of America, Oliver Building, Pittsburgh, has arranged for a bond issue of \$18,000,000, the proceeds to be used for general operations, plant extensions, etc.

The Marvel Lamp Co., Pittsburgh, has been incorporated under Delaware laws with a capital of \$50,000 by C. V. Brown, H. Nickum and Wallace H. Nickum, Pittsburgh, to manufacture electric lamps and other electrical products. It is represented by the Capital Trust Co., Dover, Del.

The Salmon Creek Lumber Co., Kellettville, Forest County, Pa., is planning to rebuild its saw mill, power house

and other buildings, destroyed by fire Sept. 26, with loss estimated at about \$100,000, including machinery.

The Standard Specialty Co., Pittsburgh, has been chartered under State laws to manufacture metal products. J. K. Bazukna, 1434 Sheffield Street, is treasurer.

The Air Reduction Co., 120 Broadway, New York, has filed plans for the first unit of its new plant at 1106-16 Ridge Avenue, Northside, Pittsburgh, for the manufacture of commercial oxygen, etc., estimated to cost about \$60,000.

The W. L. Singer Ice Co., McKees Rocks, Pa., is having plans prepared for a new one-story ice-manufacturing plant, 50 x 60 ft., estimated to cost about \$60,000. A. C. Bishop & Co., 427 Guardian Building, Cleveland, are architects and engineers.

Chicago

CHICAGO, Oct. 3.

The Santa Fe last week placed orders for a 250-ton, one 5-ton and six 15-ton overhead cranes with the Shaw Electric Crane Co. for its new Albuquerque, N. M., shops. This road has also added to its outstanding inquiries as follows: One 36-in. x 36-in. x 8-ft. belt-driven horizontal slab miller (alternate figures on motor-driven machine also asked for); two motor-driven single wet grinders with 20-in. x 2½-in. wheel, Whitney or equivalent; two No. 7 Sturtevant pressure blowers; one 2000-lb. single-frame steam hammer and one jib crane.

No other railroad business is in prospect outside of a few machines recently inquired for by the Rock Island, and demand from industrial companies is light. Dealers report inquiries far more numerous than sales, which probably indicates that prospective buyers are shopping extensively. Actual business booked by local machinery houses in September was disappointing. The month's total sales were generally below those of August and, in a number of cases, were the smallest of the year.

A manufacturer of universal cutter and tool grinders, surface grinders and twist drill grinders has announced a reduction of about 15 per cent on most of its products.

Building permits issued in Chicago for the week ended Sept. 29, as compared with the same week last year, show heavy increases in number, frontage and total values listed. In that week 265 permits were issued, involving 7468 ft. of frontage and a total value of \$3,341,800, as against 61 permits, 2439 ft. of frontage and \$1,706,900 for the same week a year ago.

The Kaestner & Hecht Co., manufacturer of elevators, 500 Throop Street, Chicago, has commenced the erection of a one-story plant at 1108 Blackhawk Street. Adjoining the new factory are a number of buildings owned by the company, which will be remodeled. Upon completion the Throop Street plant will be abandoned and manufacturing operations will be concentrated at the Blackhawk Street works. Frank D. Chase, Inc., Chicago, is engineer in charge of construction.

The Waterway Paper Products Co. is building a plant at 3201 South Kedzie Avenue, Chicago, to cost \$150,000. Frank D. Chase, Inc., 645 North Michigan Avenue, is in charge of the work. The building will contain a machine repair shop.

The Lawrence Heat Distributor Co., 3522 Vincennes Avenue, Chicago, has been incorporated with \$3,000 capital stock to manufacture a heat saving device for gas ranges. It has a small plant at the address given. The incorporators are N. H. Cance, Frank G. Lawrence and L. N. Lindskog.

The Universal Automobile Accessory Co., 7355 Exchange Avenue, Chicago, has been incorporated with \$5,000 capital stock to manufacture locks, burglar alarms and other patented devices for automobiles. The incorporators are Charles L. Gerds, Martin G. Hausler, Jr., and William A. Schaar. At present its offices are care of Charles L. Gerds, 6355 Exchange Avenue, but it expects to secure factory space.

The Universal Chain Co., First National Bank Building, Chicago, has been incorporated with \$50,000 capital stock by Herman A. Robey, Jesse W. Scott and Dwight W. Coultas to manufacture a patented automobile tire chain designed for automatic attachment and release. At present the company is subletting its work, but is investigating the matter of securing its own factory facilities.

The Triangle Appliance Mfg. Co. has been incorporated with \$10,000 capital stock by M. H. Silverstein, Roy Silverman and G. Litka to manufacture electric toasters, curling irons, lamps and other electrical devices. It has secured factory space at 160 North Wells Street, Chicago.

The Niagara Radiator & Boiler Co., North Tonawanda, N. Y., has been granted a permit to construct a foundry at East Eighty-third Street and Woodlawn Avenue, Chicago.

W. H. Snow, 4713 Forrestville Avenue, Chicago, has let

contract for a one-story garage, 95 x 200 ft., at 4510-30 North Clark Street, to cost \$50,000.

The Miller Plating Co., 1530 Monroe Avenue, Grand Rapids, Mich., has been taken over by the Grand Rapids Metal Products Co. The change means the addition of the manufacture of furniture hardware at this plant to the present business of plating nickel, brass, copper, zinc, silver and gold. J. C. Miller, for 17 years with the Wolverine Brass Co., is president of the new company. A. William Honecker, formerly purchasing agent for the Grand Rapids Brass Co. and the Wilmarth Show Case Co., is secretary-treasurer.

An industrial annex to the Rockford, Ill., high school is rapidly nearing completion. The building contains four floors, the second of which will be a machine shop. School authorities have been negotiating for the purchase of machine tools at Camp Grant. The first floor will contain an automobile repair shop, an electrical shop, and a foundry with cupola. The third floor will be devoted to woodworking and the fourth floor will be equipped with three drafting rooms.

The Public Service Co. of Northern Illinois, 72 West Adams Street, Chicago, will reconstruct as soon as possible the power plant which was destroyed by lightning, Sept. 24, at Barrington, Ill.

The Peoria Sheet Metal Works, Peoria, Ill., has purchased the former Elks' clubhouse at 110 Seventh Avenue and is tearing it down to make room for a new plant to cost \$35,000.

J. P. Heath & Co., Waukegan, Ill., manufacturer of architectural iron and bronze products, has awarded contract to the Manufacturers' Terminal Co., Waukegan, for a new two-story foundry and machine shop, 100 x 108 ft., estimated to cost \$100,000 including machinery.

The R. Hardesty Mfg. Co., 1833 Market Street, Denver, Colo., manufacturer of metal products, cans, etc., is completing plans for two additions, both one-story, 100 x 160 ft. and 120 x 160 ft. respectively, estimated to cost \$90,000, including machinery. C. S. Lambie, Tramway Building, is architect and engineer.

The Western Body Mfg. Co., 763 Third Street, North Minneapolis, Minn., manufacturer of automobile bodies, is considering the erection of a new three-story and basement factory. Plans will be prepared in the near future. E. F. Gross is president.

The Ekco Engineering Co., 910 West Washington Boulevard, Chicago, has been incorporated with a capital of \$200,000 by Benjamin E. Jaffe and Harry Blitzsten to manufacture bakers' tools, ovens and kindred equipment.

Baltimore

BALTIMORE, Oct. 3.

The Barclay Petroleum Corporation, 35 Wall Street, New York, is considering tentative plans for a new oil refinery in the vicinity of Baltimore.

The Avon Specialties Co., Inc., 44-46 Market Place, Baltimore, has been incorporated with a capital of \$150,000 by William L. Thaxton, C. A. Creidler and George H. North to manufacture automobile equipment, parts, etc.

The Metaloy Co. of Baltimore, 1728 Mulliken Street, Baltimore, has been chartered under State laws to manufacture metal and metal-alloy products. The incorporators are John L. Brown, William B. Rearick and Louis S. Houghton.

The Maryland Vegetable Oil Co., Fifteenth Street and Eighth Avenue, Canton, Baltimore, manufacturer of refined cottonseed oils, and other oil products, has arranged for an immediate sale of stock to total \$780,000. Its plant in this section is nearing completion, and it is said, will represent an investment of \$950,000. Machinery and equipment will be installed at once and it is proposed to be ready for operation early in the year. John F. Nissly is president, and C. D. Pruden, vice-president and treasurer.

The Consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, has arranged for a new bond issue of \$9,000,000, the proceeds to be used for general operations, plant expansion and improvements, etc.

The Voluta Corporation, 2826 Huntingdon Avenue, Baltimore, has been incorporated with a capital of \$100,000 by Charles J. and L. M. Cook, and Edward H. Wertz to manufacture talking machines, spring motors, parts, etc.

Richard K. Meade, 11 East Fayette Street, Baltimore, chemical engineer, has preliminary plans under way for a new lime plant at the pulp mill of the Bathurst Co., Ltd., Bathurst, New Brunswick, N. S., consisting of two kilns, power house equipment, automatic stokers, etc. A reinforced-concrete coal pocket, with coal-handling and conveying apparatus will be constructed. Bids will be asked at an early date.

The Qualitoy Mfg. Co., Wilmington, Del., has been incorporated under State laws with capital of \$50,000 to manufacture toys. It is represented by the Colonial Charter Co., Ford Building, Wilmington.

The Electric Foundry & Engineering Co., Wilmington, Del., has been incorporated under State laws with a capital of \$100,000 to manufacture steel and iron castings, machinery and parts. It is represented by the Capital Trust Co. of Delaware, Dover, Del.

The Automatic Safety Car Step Co., Kenney Building, Charlotte, N. C., has secured a building, one-story, 40 x 300 ft. for new works to manufacture metal safety steps. Machinery will be installed at once. The company is headed by John S. and Frederick Blake.

A. L. Flint, general purchasing officer, the Panama Canal, Washington, will take bids up to Oct. 18, for mechanical and other equipment for the Canal Zone, including wire and cable; gasoline engine; aero lighting switches; receptacles; reflectors and other electrical equipment. Office of the assistant purchasing agent is at 24 State Street, New York.

The Luray Ice Co., Luray, Va., is planning for the construction of a new power plant. E. C. Harnsberher is president.

Fire, Sept. 24, destroyed the plant of the Bowie Foundry Co., East Rome, Rome, Ga., with loss reported at about \$100,000, including machinery. It will be rebuilt at once.

The Universal Roller Bearing Co., Norfolk, Va., recently organized with a capital of \$500,000 is planning for the erection of a factory to manufacture roller and ball bearings. Charles I. Lott, Norfolk, is vice-president in charge.

The Acme Mfg. Association, Wilmington, Del., has been incorporated in Delaware with capital of \$2,000,000 to manufacture refrigerating, machinery and ice equipment. It is represented by the Capital Trust Co., Dover, Del.

The Virginia Railway & Power Co., Richmond, Va., has completed plans for the immediate erection of a new hydroelectric power plant at Petersburg, Va., to cost about \$100,000.

Buffalo

BUFFALO, Oct. 3.

The National Lamp Works of the General Electric Co., Nela Park, Cleveland, is planning for the early occupancy and operation of its new plant on East Ferry Street, Buffalo, now in course of construction. The factory will be three stories and basement, 80 x 320 ft., and with machinery will represent an investment of about \$750,000.

The Everice Holding Corporation, Buffalo, has been incorporated with a capital of \$500,000 by Maxwell and Edward Karge, Phoenix, N. Y., and William W. Weigel, Buffalo, to manufacture refrigerating machinery, heating equipment, etc. It is represented by Charles J. Deckop, Brisbane Building, Buffalo.

The Berglof Rotary Gas Engine Patents, Inc., Buffalo, has been incorporated with a capital of \$50,000 by K. Berglof, and W. C. Vincent, Buffalo, to manufacture gas engines and parts. It is represented by Raymond C. Voght, Morgan Building.

John J. Halt, 552-54 Genesee Street, Buffalo, has plans under way for a one-story machine and repair building for automobile service, 32 x 50 ft.

The Corning Brick, Terra Cotta & Tile Co., Corning, N. Y., will commence the immediate rebuilding of the portion of its plant, recently destroyed by fire with loss in excess of \$50,000, including machinery. M. E. Gregory is head.

The Niagara Falls Felt & Paper Co., Niagara Falls, N. Y., soon to break ground on Sugar Street for a new plant to cost about \$300,000, will comprise a reorganization of the Kingston Paper Co., Little Falls, N. Y. The latter company name will be discontinued.

Fire, Sept. 29, destroyed power equipment and general machinery at the plant of the Douglas Packing Co., Fairport, with loss, including five buildings, estimated at close to \$1,000,000. It specialized in the production of food-stuffs. John Clingen is general manager.

The Niagara Gorge Power Co., Ellicott Square, Buffalo, an affiliated organization of the Niagara Gorge Railway Co., same address, has made application for permission to erect a generating plant to utilize waters from the gorge section of Niagara Falls for the development of 300,000-hp.

The Carthage Sulphite Pulp & Paper Co., Carthage, N. Y., has arranged for a bond issue of \$600,000, the proceeds to be used for general operations, extensions, etc.

The Syracuse Oil Burner Co., Syracuse, N. Y., has been incorporated with a capital of \$600,000 by F. W. J. McKib-

ben. A. H. Mallory and R. H. Carhart, 623 Oneida Street, to manufacture oil burners and oil-burning electric and gas appliances.

The Standard Oil Co., Rochester, N. Y., will build a new one-story automobile service and repair works, 51 x 62 ft., at Geneseo, N. Y., for company trucks. Foundation work is under way.

Fire, Sept. 22, destroyed a portion of the plant of the Syracuse Twist Drill Co., 934-38 Grape Street, Syracuse, with loss reported at \$10,000.

The Rate Reduction & Service Corporation, Syracuse, has been chartered under State laws by B. E. Taylor, B. E. Galloway and Thomas W. Dixon, Gurney Building, to manufacture fire extinguishers and appliances for fire-fighting.

Indianapolis

INDIANAPOLIS, Oct. 3.

The Coats Steamers, Inc., 511 Bankers' Trust Building, Indianapolis, recently organized under Delaware laws with capital of \$5,000,000, is perfecting plans for the erection of its new plant in the vicinity of Terre Haute, Ind., to manufacture steam-driven pleasure automobiles. The company has been conducting production at a plant at Indianapolis, and the initial cars will be placed on the market in a few weeks. The new plant is expected to cost about \$200,000, including machinery. George G. Rowland is president, and C. A. Coats, general manager.

The Modern Die & Tool Co., Indianapolis, has been incorporated with a capital of \$75,000, to take over and operate the company of similar name with plant at Georgia and Pennsylvania streets. The new organization will be operated in conjunction with the Victor Bearings Co., recently organized by the same officials, with capital of \$300,000. William L. Sandage and Roger G. Wolcott head the company.

The Parker Tire & Rubber Co., 264 Allen Avenue, Indianapolis, will hold in abeyance the erection of the second unit of its tire plant, on an adjoining site. Foundation work has been completed and part of the superstructure. The new plant will be two stories, 100 x 600 ft., and is estimated to cost about \$300,000, including machinery. Paul P. Parker is president.

The Pendergast Fence Co., Stillwater, Minn., manufacturer of wire fencing, is planning to call for bids early in November for the erection of its new branch factory at Elkhart, Ind., to be one-story and basement, and estimated to cost about \$25,000. It also operates a plant at Fort Madison, Iowa. M. R. Pendergast is president.

Machine tools and other mechanical equipment will be installed in the new vocational school to be erected by the Board of Education, Angola, Ind., estimated to cost about \$125,000. A. H. Elwood & Sons, Haynes Building, Elkhart, Ind., are architects.

The Board of Education, Fort Wayne, Ind., is completing plans and will soon take bids for new vocational shops at the Central High School. The structure, to house a gymnasium as well, will be two stories and basement, and estimated to cost about \$200,000. Charles R. Weatherhogg, 405 Citizens' Trust Building, is architect.

Ohio

The past week has brought out more inquiry for single machines in the Cleveland market and the outlook is more promising. Dealers' September sales were about equal to those in August. Standard used tools are in fair demand, but the call for machinery is largely from existing small plants or for equipment for small machine shops. There are signs of some demand from the Akron rubber plants for equipment used in making products other than tires, and one inquiry is for six special profiling machines. Up to the present time practically no machinery has been placed this year by Akron tire manufacturers.

The equipment of the Smolensh Mfg. Co., 2108 Superior Avenue, Cleveland, has been purchased by the Hess-Schenk Co., machinery dealers, and will be sold either as a whole or in single machines. It includes about 40 machine tools.

Toledo, Ohio, has asked for bids for a waterworks pumping station which will require a 10-ton, three-motor crane with a 33-ft. 11-in. span.

The demand for small hand-operated cranes and chain hoists has improved.

In Cincinnati, September with most manufacturers will show a slight improvement in orders booked compared with July and August. Machinery dealers also report business as improving, but the fact that a number of buyers are prolonging their vacations is holding up some prospective purchases. The tone of the inquiries is distinctly better and

several manufacturers are contemplating installing new equipment to more efficiently turn out their products. While inquiries are mostly for single machines a few are calling for from two to six tools. It is reported that the Big Four Railroad, which recently purchased a number of tools for its Beech Grove shops, will shortly issue a list for various other shops. The list recently issued by the General Motors Corporation for Dayton plants will not be acted upon at present. A safe and lock company recently bought a \$20,000 machine from a manufacturer in this section and a dealer reports an order for three tools from a maker in the northern part of the State. It is stated that the city of Tokio, Japan, will purchase fire-fighting equipment in this country, the chief of the department now being in the United States on an inspection trip. An encouraging feature to the machine-tool trade is the number of men returning to work in various railroad shops. Most of these men had been idle since last winter, but are coming back gradually.

The Missouri Chain Co., Moberly, Mo., will establish its plant in Cleveland and has secured quarters at 1293 East Ninth Street. It will shortly begin the manufacture of automobile chain. Harry Whiteside is manager.

The plants of the International Metal Hose Co., Buckeye Forging Co. and Ames Bag Machine Co., occupying a factory at 10206 Harvard Avenue, Cleveland, were badly damaged by fire a few days ago.

The American Mine & Door Co., Canton, Ohio, contemplates the erection of a new plant to cost about \$100,000.

The Vapo Stove Co., recently organized in Lima, Ohio, has decided to locate its plant in that city and will occupy a building formerly used by the Lima Sheet Metal Products Co., which is moving into new quarters. Fred H. Ash, previously connected with the A. & B. Stove Co., Battle Creek, Mich., is manager.

The Schory & Schellhase Coal & Ice Co., Canton, Ohio, will erect a new ice-manufacturing plant with a daily capacity of 65 tons. Contract for the equipment has been placed with the Arctic Ice Machine Co., Canton.

The Bryan Pattern & Machine Co., Bryan, Ohio, which will shortly begin to manufacture pistons for automobile engines, will purchase a number of single purpose machines for making this new product.

Detroit

DETROIT, Oct. 3.

The Kess-Line Motors, M. C. Kessler, president, has obtained possession of the former Detroit plant of the Liberty Motors Car Co. and will manufacture the Kess-Line 8-cylinder automobile.

The Motor Wheel Corporation, Lansing, Mich., has announced its expansion plans for the immediate future. The oldest of the Prudden Wheel Co. buildings will be demolished to make room for a new rim unit and office space. The present hub shops of the Prudden and Auto wheel plants will be consolidated into one shop of increased capacity, for which considerable machinery has been ordered.

The Allegan Casket Co., Allegan, Mich., organized recently by William B. Schmitz, has purchased a site and will build a factory, 100 x 110 ft., U-shaped, each wing 30 ft. wide. Work on the foundation will be started within a few days.

Hickler Brothers & Co., Sault Ste. Marie, Mich., have let contract for a one-story building, 50 x 150 ft., to repair and rebuild automobile and marine gas engines and regrind cylinders, pistons and crankshafts.

The newly organized Rickenbacher Motor Co., Detroit, has obtained possession of the Michigan Avenue plant of the Detroit Pressed Steel Co., formerly occupied by the Disteel Wheel Corporation division of the latter company. It consists of 27½ acres, with a one-story building, with 12½ acres of floor space, and a foundation for a building with 250,000 sq. ft. of floor space. The property was originally used by the Government for shell manufacture. The Rickenbacher company expects to get into production by January, with a schedule of 200 cars a day.

The Auto Accessories Mfg. Co., Detroit, has been organized with a capital of \$25,000 to manufacture automobile and air plane accessories and parts, machinery, etc. It is headed by Svend Raasted, 1637 Seneca Avenue, Detroit. Associated with him are John B. and John B. Corliss, Jr., 68 West Canfield Avenue, Detroit.

The Michigan Engineering & Mfg. Co., Bay City, Mich., has been organized by Zenas E. Colby, John E. Olsen, Harry A. Wescott and George R. Lawton, Bay City, with a capital of \$20,000. It will manufacture machinery and parts and do a general factory construction business.

The Detroit Starter Co., Inc., has been incorporated by Clement F. Krueger, 2444 West Grand Boulevard, Detroit;

Kenneth Greenleaf and Frank C. Sibley, Detroit, to manufacture automobile units, parts and accessories. It is capitalized at \$25,000.

The Britton Motor Axle Co. has been organized in Saginaw by William M. Britton, formerly chief engineer Republic Motor Truck Co., Alma. It is capitalized with \$500,000 preferred and 30,000 shares no par value common stock.

Officials of the Atlas Drop Forge Co., Lansing, are contemplating an addition to their plant.

The Wales Co., Kalamazoo, has been organized with a capital of 100,000 shares no par value common stock and \$10,000 in preferred stock to manufacture the Wales gas heater.

The Cameron Motors Corporation, Greenville, is planning to erect a foundry, 80 x 150 ft.

Campbell, Wyant & Cameron, Muskegon, are completing the first of eight units of a foundry to manufacture automobile castings. Each unit will have a daily production of 250 tons.

The City Engineering Department, Lansing, Mich., will take bids early in October for its new municipal hydroelectric generating plant, estimated to cost \$1,600,000. Woodwell & Resler, 501 Fifth Avenue, New York, are architects and engineers. J. A. Parsons is city clerk.

George E. Paul, receiver for the Jackson Stove & Stamping Co., Jackson, Mich., is arranging for the early sale of property of the company, including machinery, tools, dies, etc. The plant is designed to manufacture oil cook stoves, oil heating stoves, ovens, etc.

The Automotive Utilities Corporation, Detroit, has been incorporated with a capital of \$25,000 by Arthur R. Thomas, Ralph H. and Thomas T. Hollinger, 408 Detroit Savings Bank Building, to manufacture automobile equipment and parts.

The H. M. Reynolds Shingle Co., 640 Chestnut Street, Grand Rapids, Mich., has commenced excavations for its new three-story and basement plant, 60 x 350 ft., estimated to cost about \$100,000. It will replace the works recently destroyed by fire and will be provided with new equipment to manufacture roofing products.

The Haynes Wire Wheel Works, Inc., Jackson, Mich., will commence the immediate erection of a one-story shop addition, 80 x 190 ft., estimated to cost about \$25,000. Stanley Porter is manager.

The Laboratory Apparatus Co., Ann Arbor, Mich., has been incorporated with a capital of \$25,000 by Frank Schaefer, Burt F. Schumacher and Fred T. Stowe, Ann Arbor, to manufacture laboratory equipment, precision apparatus, etc.

A power house, machine shop and other buildings will be constructed by Ruggles & Rademaker, 381 River Street, Manistee, Mich., in connection with their proposed new salt plant, now being erected and estimated to cost about \$1,000,000, including machinery. F. W. Perkins, company address, is architect and engineer.

Milwaukee

MILWAUKEE, Oct. 3.

The general situation in the local metal-working industry appears fundamentally more hopeful. One outstanding feature is that established concerns are figuring more definitely on plant improvements and extensions, while new capital is entering the industry, on at least a small scale, after a lack of interest for a long time. New plant construction now in progress and definitely projected is more prominent than at any time this year. The reflection of this improvement on the machine-tool trade as yet is negligible, but it is confidently believed it will become clearer from now on. September sales were slightly in excess of August, although in the previous month the volume was probably the lowest of the year. The slow development of railroad buying is the most disappointing feature of the situation.

The Waukesha Steel Products Co., Waukesha, Wis., which represents the reincorporation of Henry Bryant & Co., Inc., 85 Oneida Street, Milwaukee, dealer in iron and steel products and waste materials, scrap metals, etc., intends to engage in the manufacture of pipe, railings, barn columns, posts, post braces and similar steel products for the agricultural trade. At the head of the concern is Henry Bryant of Waukesha, who founded the original company and served as its president until the change was made. It is the intention to establish a plant in Waukesha, to which city the general offices have been transferred. Details, however, have not been arranged.

The equipment for which the Department of Public Works, City Hall, Milwaukee, is asking sealed bids for the new Riverside pumping station, now under construction at the foot of Chambers Street, includes one 25,000,000-gal. and two 22,000,000-gal. vertical triple expansion, crank and fly-

wheel type of engines, with auxiliaries, to be ready for operation within 18 months after the work has started. Bids close Oct. 24. Bidders are required to furnish a bond of \$210,000 or certified check for \$105,000. Percy Braman is commissioner of public works.

The Board of Education, Merrill, Wis., is taking sealed bids until Oct. 12 for the construction of a new high school and grammar school, designed by Parkinson & Dockendorff, architects, LaCrosse, Wis., and estimated to cost \$250,000. The high school will contain a manual training department. Harry R. Allen is secretary of the board.

The Standard Sheet Metal Works, 1184 Twenty-fourth Street, Milwaukee, has awarded contract for a new shop, 32 x 120 ft., at Thirtieth and Townsend streets, to cost about \$20,000, including equipment. John Madis is president and general manager.

The John G. Wollaeger Co., 417-421 Wells Street, Milwaukee, distributor of Peerless and Studebaker automobiles, has purchased a site at Grand Avenue and Twenty-eighth Street, and engaged Max Fernekes, architect, 97 Wisconsin Street, to design a four-story garage and service building, 90 x 120 ft., estimated to cost \$120,000 complete. Work will start about Nov. 1.

The Bergstrom Paper Co., Neenah, Wis., will build a two-story addition, 40 x 80 ft., to its machine and millwright shop, at a cost of \$25,000, including a small list of equipment.

The Blever Casting Co., Slinger, formerly Schlesinger, Wis., has been incorporated with a capital stock of \$10,000 to take over and operate a gray iron foundry which has been idle for several months. The principals are Joseph and Edmund Blever and Frank Burke.

The Knox Refrigeration Co., Milwaukee, has filed articles of incorporation with capital stock of \$400,000 to engage in refrigeration engineering, manufacture of refrigerating systems, etc. The incorporators are J. F. Knox, George E. Page and Alfred O. Wilmot, 606 Forty-eighth Street, Milwaukee.

Peter Pirsch & Co., Kenosha, Wis., manufacturers of fire apparatus, motor-propelled and horsedrawn, has let the general contract to George Lindemann & Co., local contractors, for a \$50,000 shop addition, which will require a small list of equipment. Charles O. Augustine, Kenosha, is architect.

The Luick Ice Cream Co., Ogden Avenue and Jackson Street, Milwaukee, has engaged Brust & Philipp, architects, 506 Free Press Building, to design a new ice cream factory and cold storage building, using the present plant as a nucleus. It will cost about \$100,000, including new engines, boilers, refrigerating machinery, etc. William F. Luick is president.

The Aluminum Flux Co., Rhinelander, Wis., has been incorporated with a capital stock of \$15,000 to manufacture metal specialties, solder, fluxes, etc. The incorporators are William Bolus, F. H. Piehl and F. E. Wood.

The V. Krefl Co., Eagle River, Wis., will start work Oct. 10 on a one-story brick and concrete machine shop, 60 x 75 ft., for manufacturing automotive equipment. It formerly was located at Two Rivers, Wis., and has been reincorporated with \$75,000 capital.

The Brewer Mfg. Co., Manitowoc, Wis., manufacturer of piano benches, optical office supplies, cabinets, etc., has purchased a new site and will build a factory and power plant, 60 x 120 ft., to cost about \$40,000.

Seattle

SEATTLE, Sept. 27.

The Ellis-Myroie Lumber Co., Seattle, is planning to immediately rebuild its wood-working plant, recently destroyed by fire with loss estimated at \$125,000, including machinery.

The Columbia Tire Co., 1401 Northwest Bank Building, Portland, Ore., will soon call for bids for a new two-story, reinforced-concrete plant. It will have a frontage of 350 ft., with four wings, each 90 ft. long, and is estimated to cost about \$100,000. R. A. Wurzburg heads the company.

The Standard Stoneware Co., Chester, Wash., is planning the erection of a new factory to manufacture sanitary stoneware products, estimated to cost in excess of \$75,000, including machinery. Paul Seidel is president.

The Oergon Pulp & Paper Co., Salem, Ore., has plans under way for a new hydroelectric power plant on North Mill creek, with initial capacity of about 1000-hp. It is estimated to cost about \$100,000, including machinery.

The Tillamook County Box & Mfg. Co., Tillamook, Ore., recently organized, has plans under way for the erection of a new plant at Twin Rocks, Ore., estimated to cost \$50,000. Frank Readon and I. A. Dubois head the company.

The Northwestern Electric Co., Portland, Ore., has ar-

raised an appropriation of \$5,000,000 for extensions and improvements in plants and system. It is proposed to expend about \$1,250,000 a year.

The Koster Products Co., Vancouver, Wash., manufacturer of furniture, is planning for the erection of works on a 100-acre site in the vicinity of the Standifer Shipyards. It is estimated to cost in excess of \$500,000 and will give employment to about 2500.

The Rainier Mfg. Co., Rainier, Wash., recently organized as a co-operative company, capitalized at \$1,000,000, to manufacture sash, doors, etc., has broken ground for the first unit of its new six-unit plant, estimated to cost in excess of \$500,000.

California

LOS ANGELES, Sept. 27.

The Winton Engine Works, 2116 West 106th Street, Cleveland, Ohio, is said to be planning the erection of new works at Wilmington, Los Angeles, to manufacture Diesel engines and parts. It will comprise a foundry, machine shop, assembling works, pattern shop, etc. J. H. Kain, Los Angeles, is local representative.

The Barnhart Aircraft Co., Inc., Pasadena, Cal., has been incorporated with a capital of \$1,000,000 by G. E. Barnhart, C. R. Little and M. S. Elton, all of Pasadena, to manufacture airplanes and parts.

The Los Angeles Gas & Electric Corporation, Los Angeles, has arranged for a bond issue of \$1,500,000, the proceeds to be used for general operations, extensions and improvements.

The Sierra Clay Products Co., Sparks, Nev., H. O. Laque, president, has acquired property in the Truckee River canyon, near Vista, Cal., for the erection of a new plant to manufacture brick, tile, etc. It is estimated to cost in excess of \$75,000.

Henry Rosenfeld, 130 Montgomery Street, San Francisco, has awarded a contract to Macdonald & Kahn for two one-story brick machine shops on North Pine Street estimated to cost about \$30,000.

The Occidental Furniture Mfg. Co., 1062 Folsom Street, San Francisco, is planning to rebuild the portion of its plant destroyed by fire, Sept. 17, with loss estimated at about \$75,000, including equipment.

The California-Mexican Oil & Refining Co., Los Angeles, is planning the erection of a new refinery at Long Beach, Cal., estimated to cost close to \$500,000, including machinery. Vernon Dumas is one of the heads of the company.

The Imperial Ice & Development Co., El Centro, Cal., will soon commence the erection of a new ice-manufacturing and refrigerating plant, estimated to cost about \$250,000 with machinery.

G. M. Roy, San Jose, Cal., is organizing a company with \$4,000,000 capital stock to build a plant to manufacture patent washers for locking nuts to bolts, the invention of B. F. Hildebrand, San Jose, who will be an official of the new organization. It is said that the initial plant will cost in excess of \$150,000.

The Gulf States

BIRMINGHAM, Oct. 3.

The Chicago, Rock Island & Pacific Railroad Co., La Salle Street Station, Chicago, has awarded contract to the Joseph E. Nelson Co., 3240 South Michigan Avenue, for a new engine house and repair shops at Amarillo, Tex. Construction will be placed under way at once.

Fire, Sept. 19, destroyed a portion of the car shops of the Missouri, Kansas & Texas Railroad Co., North Wichita Falls, Tex., including machine shops and equipment, wood-working mill and other structures with loss of about \$75,000. Headquarters are in the Railway Exchange Building, St. Louis.

The Key West Electric Co., Key West, Fla., has awarded contract to Stone & Webster, Inc., 147 Milk Street, Boston, Mass., for extensions and improvements in its generating plant, estimated to cost about \$150,000. B. L. Grooms is general manager.

J. T. and J. H. Jones, 2401 Travis Street, Dallas, Tex., have completed plans for a two-story automobile service building, 100 x 100 ft., to include machine and repair shop, estimated to cost about \$75,000. Construction will commence at once.

The Magnolia Petroleum Co., Dallas, Tex., is planning for

extensions and improvements in its oil plant at Groesbeck, Tex., estimated to cost about \$750,000, including equipment.

Fire, Sept. 17, destroyed a portion of the plant of the Texas Oil Refining Co., Wichita Falls, Tex., with loss estimated at about \$30,000.

The Planters, & Merchants' Mill Co., New Braunfels, Tex., is planning for the immediate erection of a new hydroelectric power plant, estimated to cost close to \$90,000.

The Louisiana Celotex Co., New Orleans, has tentative plans under way for additional units at its new plant for the manufacture of insulating board products from waste sugar cane stalks. The present works, recently placed in operation, represent an investment of about \$500,000, including power house, mechanical dryer building, etc., and additional units are expected to cost close to a like amount. J. H. Shaw is vice-president and general manager.

The Royal Palm Ice & Refrigerating Co., Miami, Fla., recently organized with a capital of \$125,000, is completing plans for a new ice-manufacturing and refrigerating plant, 100 x 130 ft. J. C. Pereno is president.

The Patton Cement Plaster Co., Rotan, Tex., recently incorporated with a capital of \$350,000, has plans under way for the construction of a new factory, estimated to cost in excess of \$100,000, with machinery. J. W. Patton is president, and E. W. Mabon, secretary and treasurer.

The Central South

ST. LOUIS, Oct. 3.

The demand for machine tools in this market is exceedingly light. Manufacturers of piston rings are busy, but have no machine-tool requirements for the present.

The Eagle Motor Truck Co., 6156 Barmer Avenue, St. Louis, has just completed an addition to its factory.

The Missouri, Kansas & Texas Railroad Co., Railway Exchange Building, St. Louis, has completed plans and is taking bids for a new one-story machine shop, 30 x 50 ft., at its repair works at Houston, Tex. It is reported to be planning to rebuild its forge shop and other structures at Parsons, Kan., destroyed by fire, Sept. 17, with loss estimated at about \$160,000, including equipment.

F. R. Lawson, Nowata, Okla., and associates are having plans prepared for a two-story ice-manufacturing plant at Coffeyville, Kan., estimated to cost about \$100,000.

The Vetter Machine Shop, Inc., Jefferson City, Mo., has been chartered under State laws to operate a general machine construction and repair works. Henry J. Vetter, 212 East Main Street, heads the company.

The Unit Motor Co., 115 West Thirteenth Street, Kansas City, Mo., manufacturer of automobile equipment and parts, is planning for the installation of additional machinery at its factory. The company recently increased its capital from \$2,000,000 to \$5,000,000 for expansion.

The Michael's Art Bronze Co., 230 Scott Street, Covington, Ky., has awarded contract to George Scheper, 52 John Street, for a four-story addition to its plant, 45 x 65 ft., estimated to cost about \$45,000. Construction will commence at once. F. I. Michael is head.

The Lost River Cave Co., Bowling Green, Ky., recently organized, is planning the erection of a new hydroelectric power plant in this vicinity. Construction will start at an early date. Henry L. Underwood is president, and James K. Barr, treasurer and manager.

The Henryetta Glass & Mfg. Co., Henryetta, Okla., will break ground at once for its new plant to manufacture globes, auto lens and kindred products. A list of equipment has been arranged, to include molds, spraying machines, mechanical fans, air compressor, blow pipes, with gas engine and other power equipment. H. L. Chambers is secretary and treasurer.

W. J. Barnhill & Son, Madisonville, Ky., will install a complete machine and repair shop in the new two-story automobile service building, 65 x 160 ft. Bids will be asked at an early date. John T. Waller, Hopkinsville, Ky., is architect.

The Bridges Wheel Corporation, Texarkana, Ark., recently organized with a capital of \$100,000, is arranging for the establishment of a plant to manufacture wheels for steam and electric railroads. A. J. Kizer, Texarkana, is president.

The Union Electric Light & Power Co., Twelfth and Locust streets, St. Louis, is planning for additions and improvements in its electric generating plants and system to cost about \$1,000,000.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined bars, base price	2.78c.
Swedish bars, base price	10.00c.
Soft steel bars, base price	2.78c.
Hoops, base price	3.88c.
Bands, base price	3.43c.
Beams and channels, angles and tees	
3 in. x ¼ in. and larger, base.....	2.88c.
Channels, angles and tees under 3 in. x	
¼ in., base	2.78c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger.....	2.75c.
(Smooth finish, 1 to 2½ x ¼ in. and larger) ..	2.95c.
Toe calk, ½ x ¾ in. and larger.....	3.45c.
Cold-rolled strip, soft and quarter hard..	6.75c. to 7.75c.
Open-hearth spring steel	4.25c. to 6.00c.
Shafting and Screw Stock:	
Rounds	4.38c. to 4.53c.
Squares, flats and hex.	4.98c. to 5.03c.
Standard cast steel, base price	14.00c.
Extra cast steel	17.00c.
Special cast steel	22.00c.

Tank Plates—Steel

¼ in. and heavier	2.88c.
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Sheets

Blue Annealed	Per Lb.
No. 10	3.28c. to 3.53c.
No. 12	3.33c. to 3.58c.
No. 14	3.38c. to 3.63c.
No. 16	3.48c. to 3.73c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet, Per Lb.
Nos. 18 to 20	3.80c. to 4.05c.	.....
Nos. 22 and 24	3.85c. to 4.10c.	4.50c.
No. 26	3.90c. to 4.15c.	4.55c.
No. 28	4.00c. to 4.25c.	4.65c.
No. 30	4.25c. to 4.50c.	.....
No. 28, 36 in. wide, 10c. higher.		

Galvanized

	Per lb.
No. 14	4.10c.
No. 16	4.25c.
Nos. 18 and 20	4.40c.
Nos. 22 and 24	4.55c.
No. 26	4.70c.
No. 27	4.85c.
No. 28	5.00c.
No. 30	5.50c.
No. 28, 36 in. wide, 20c. higher.	

Welded Pipe

Standard Steel	Black	Galv.	Wrought Iron	Black	Galv.
½ in. Butt...	—55	—40	¾ in. Butt...	—30	—13
¾ in. Butt...	—60	—46	1-1½ in. Butt...	—32	—15
1-3 in. Butt...	—62	—49	2 in. Lap....	—27	—10
3½-6 in. Lap.	—59	—45	2½-6 in. Lap.	—30	—15
7-8 in. Lap...	—55	—41	7-12 in. Lap...	—23	—7
9-12 in. Lap...	—54	—40			

Steel Wire

	Per Lb.
Bright basic	4.00c.
Annealed soft	4.00c.
Galvanized annealed	4.75c.
Coppered basic	4.50c.
Tinned soft Bessemer	6.00c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	15¼c. to 18¼c.
High brass wire	16¼c. to 20¼c.
Brass rod	13¼c. to 19¼c.
Brass tube, brazed	26¼c. to 30¼c.
Brass tube, seamless	18 c. to 19¼c.
Copper tube, seamless	19¼c. to 21¼c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 19½c. to 22¼c. per lb. base.	
Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.	

Tin Plates

Bright Tin	Grade	Grade	Coke—14-20	Primes	Wasters
	"AAA"	"A"			
	Charcoal	Charcoal			
	14x20	14x20			
IC..	\$10.75	\$9.25	80 lb...	\$6.80	\$6.55
IX..	12.00	10.75	90 lb...	6.90	6.65
IXX..	13.75	12.25	100 lb...	7.00	6.75
IXXX..	15.50	14.00	IC...	7.15	6.90
IXXXX..	17.00	15.75	IX...	8.15	7.90
			IXX...	9.15	8.90
			IXXX...	10.15	9.90
			IXXXX...	11.15	10.90

Terne Plates

8-lb. Coating 14 x 20	
100 lb.	\$7.50
IC	7.75
IX	8.00
Fire door stock	11.00

Tin

Straits, pig	29c.
Bar	36c. to 40c.

Copper

Lake ingot	15¼c.
Electrolytic	15¼c.
Casting	15c.

Spelter and Sheet Zinc

Western spelter	6c. to 6¼c.
Sheet zinc, No. 9 base, casks.....	11½c. open 12c.

Lead and Solder*

American pig lead	5¼c. to 6¼c.
Bar lead	6¼c. to 7c.
Solder, ½ and ½ guaranteed.....	20c.
No. 1 solder	18c.
Refined solder	15¼c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	80c.
Commercial grade, per lb.....	40c.
Grade D, per lb.....	35c.

Antimony

Asiatic	6½c. to 6¾c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....	29c. to 31c.
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Old Metals

The market continues strong with an upward tendency. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	10.25
Copper, heavy and wire.....	9.25
Copper, light and bottoms.....	7.75
Brass, heavy	4.75
Brass, light	3.75
Heavy machine composition	7.50
No. 1 yellow brass turnings.....	4.25
No. 1 red brass or composition turnings.....	6.50
Lead, heavy	4.00
Lead, tea	2.50
Zinc	2.25

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